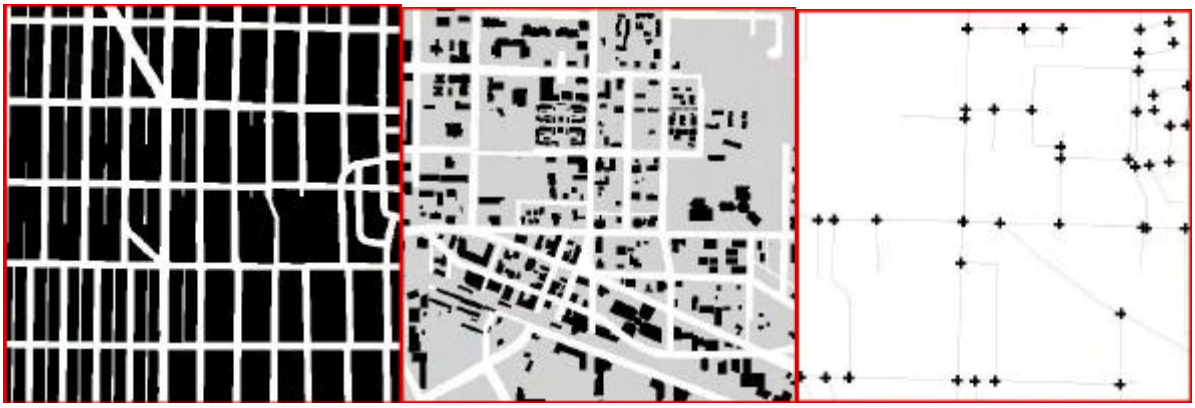
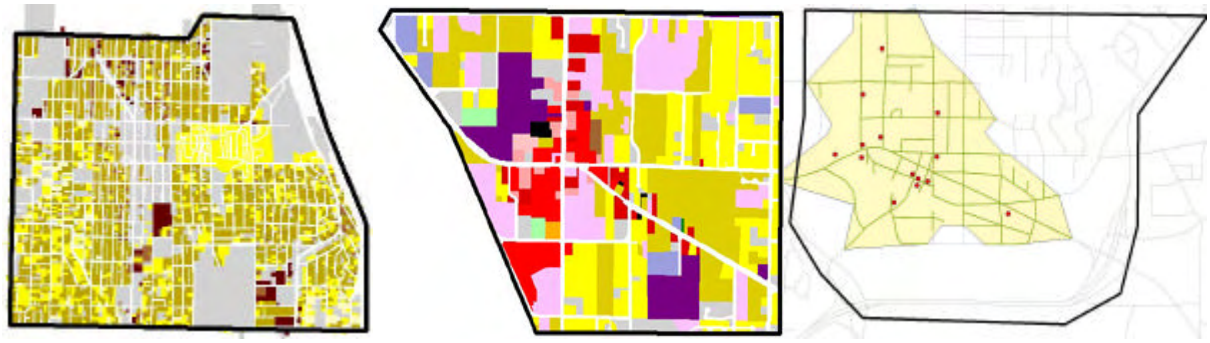
King County LUTAQH

Case Study Report: Urban Design





Lawrence Frank and Company & Dr. Kathleen Kern

December 2005

King County
LUTAQH Study
Case Study Report: Urban Design

Table of Contents

Introduction

This *Case Study Report* is part of a larger effort – *The King County Land Use Transportation Air Quality and Public Health Study* (*LUTAQH*) being undertaken by Lawrence Frank and Company in association with King County, the Puget Sound Regional Council, the Centers for Disease Control, the Cities of Seattle, Kent and Redmond with support from the Federal Transit Administration.

The ultimate goal of *LUTAQH* is to establish and implement community design principles and transportation investment policies that improve accessibility, air quality and public heath within King County and the Central Puget Sound Region. The first part of LUTAQH developed a system of measures to assess the existing land use, transportation, air quality and public health conditions and their interconnection throughout the county.

Study Purpose
The overall intention of this project is to inform land use and transportation investment decision-making with objective, locally-based research. This Case Study Section of the LUTAQH Report is intended to briefly articulate a range of potential strategies for policies that would be aimed at directing pedestrian and transit-oriented investments and supportive land use actions to create livable communities, improve mobility through alternative modes of transportation, and increased levels of physical activity and overall health.

That is, the intention of this report is to provide guidance to state, regional and local agencies regarding the types of land use and transportation actions that can help to reduce auto dependence and that will help transform travel behavior – in particular, to increase the use of transit and non-motorized forms of travel (walking and biking). Through this case study research this report will provide recommendations for network configuration, street design, neighborhood commercial development and urban design guidelines for compact development.

Case Study Application
This case study research will explore how different approaches to community design can improve our quality of life. We use three unique case studies – Kent East Hill, Redmond, and White Center – to apply the results of our research. The results of this work will support and inform the decisions that are made in these locations. Through this effort, we will identify strategies that support synergies that exist between these seemingly disparate policy areas, such as promotion of pedestrian oriented environments, that mitigate auto usage while promoting better air quality, increased physical activity, reduced levels of obesity, and improved public health.

Methodology

Three communities have been chosen as case studies. Each case study is of a community that is representative of several other communities within the County in terms of existing urban form and demographic conditions. We selected three communities (White Center, Redmond, and Kent East Hill) that are different from each other to maximize the coverage or proportion of other places in the County to which the results are generalizable.

The project uses state of the art data developed and collected within the Central Puget Sound Region by King County and the Puget Sound Regional Council. Specifically, this project incorporates King County parcel level land use data in order to develop a GIS database for each case study community. The existing demographic, transportation, land use and urban form conditions of each community are examined and analyzed using the GIS parcel based information combined with observations and data obtained from numerous site visits by the Case Study team. Urban form elements and land use variables that were determined to be significant to air quality, public health, and walkability have been particularly explored. After analyzing each case study in isolation, and in comparison, we have developed some land use, transportation, and urban design policy recommendations. Our recommendations are intended to address the specific deficiencies in urban form, transportation infrastructure and land use policies that were identified in the analysis of existing conditions and take advantage of the positive elements in each community. Strategies have been developed based on a brief survey of best practices of other municipal and regional bodies – particularly those from other west coast regions -- who are also aiming to create more 'livable' and sustainable regions with a wide range of transportation options. We have also surveyed past urban design research done for the State of Washington, and other regional bodies, which aims to explore options for denser development. Finally, we have also borrowed ideas and strategies from leading west coast urban design researchers and thinkers who have consciously tried to articulate strategies and policies for transit oriented development and more walkable neighborhoods.

Case Studies – Selection Process

White Center, Kent East Hill, and Redmond were selected with the aid of the project Advisory Committee. Five groups of criterion were used to select the case study locations.

Criterion 1 – Geographic Dispersion

It was determined by the County that one case study was to be selected from each of the county's three sub-planning areas: the West Side, East Side, and South County.

These sub-areas are recognized within the Puget Sound Regional Council's transportation planning and programming process.

Criterion 2 – Demographic Variation
The County also wanted to address transportation problems within a range of "demographic environments." This consideration is fundamental to the County's ability to address environmental justice and equity considerations that are becoming part and parcel with transportation and mobility. These criteria for equal representation across ethnic and income groups have been written into federal transportation regulations and extend out of Title VI of the Civil Rights Act and recent Presidential Executive Orders. These considerations are the basis of estimating benefits and burdens of transportation investment programs countywide and are the foundation of legal challenges within the County and other parts of the nation. Further, this criterion is consistent with County Executive Sims' efforts to address benefits and burdens of transportation investment actions countywide.

Criterion 3 – Range of Environments
The primary purpose of the GIS is to test the viability of various transportation service and investment, land use, and TDM strategies within a wide range of urban form conditions. Therefore, it is incumbent upon the study team to select case study locations are as unique from one another as possible. It was therefore determined to select a case study from an older urban center, an auto oriented suburban district, and a suburban town center.

Criterion 4 – Jurisdictions of Influence
In addition to the demographic, geographic, and typological variation, it is important to recognize the need to maximize the likelihood that the results from the study can be implemented. Therefore, it was determined to select at minimum one case study located in unincorporated King County. The other two case studies are targeted for investment by other planning efforts including WSDOT's Translake and 405 Corridor Studies, the Metropolitan Transportation Plan, or under the jurisdiction of a local government that is aggressively seeking improvements within the case study location.

Criterion 5 – Demonstration Opportunities
Again, consistent with the purpose of this effort is the ability to demonstrate the efficacy of various strategies to mitigate auto dependence within the county and to improve the overall quality of life of area residents. Each case study was selected based on either its potential for retrofit and change, or its current character and specific attributes that can be transferred to other locations of the county. More is provided on this point in the application of criterion section provided below.

Evaluation of Case Study Locations

The following section analyzes the case studies and their patterns of land use with respect to the criteria developed above. The goal is to determine whether the selected Case Study Locations present a representative sample of the County's population.

Criterion 1 – Geographic Dispersion
White Center is West County;
Redmond is East Side; and
Kent East Hill is South County

Criterion 2 – Demographic Variation
White Center is lower income and mostly non-white;
Redmond is upper income and primarily white;
Kent East Hill is racially mixed and lower to middle income.

Criterion 3 – Range of Environments
White Center is an older urban center with a connected street network and some mixing of uses, and poor pedestrian infrastructure;
Redmond is a suburban area with few pedestrian amenities, low-density residential area, and little nearby commercial development;
Kent East Hill is a suburban, auto-oriented area, with a considerable amount of high density residential development located in close proximity to shopping.

Criterion 4 – Jurisdictions of Influence
White Center is primarily in unincorporated King County and has underway a major planning effort sponsored by private funding (The Annie E. Casey Foundation). The area is changing fast and is ripe for redevelopment;
Redmond is a rapidly growing incorporated city, with a recent update to its comprehensive plan and a new transportation plan for the downtown core.
Kent East Hill is recognized by the PSRC as a "Secondary Activity Center." Activity nodes are "locations [which] may have concentrations of higher-density residential development, some mix of land uses (such as shopping or offices in addition to housing), and the potential to develop a nonmotorized network that makes it easier to walk, bike or use transit." (PSRC 2005).

Criterion 5 – Demonstration Opportunities
White Center presents an opportunity to focus on the provision of pedestrian infrastructure within the context of a connected grid network, incentives for complementary commercial uses, increased residential densities, a greater variation of housing prices and products, and improved transit service.
Redmond is seen as an environment that "works" providing some on the ground best practices - however, additional efforts are required for improved transit service to regional centers,

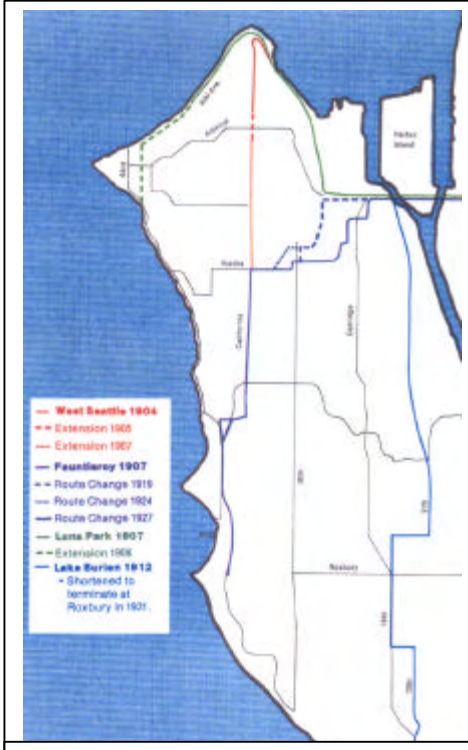
targeted pedestrian improvements between neighboring residential areas and the central commercial core, and more attention to micro-scale urban design guidelines.
Kent East Hill represents an example of a typical late 20th century suburban cluster development that has an enviable mix of land uses, high density multifamily housing, but poor site design and low street connectivity. Kent East Hill, as many communities in the county, also lacks significant park and open space resources. In order to become more walkable and transit friendly neighborhoods, such areas may require significant retrofits of their street network, the establishment of a pedestrian realm, and significant site design changes to the commercial core, which may include the reduction of surface parking and the creation of structured parking and the addition of multifamily housing and mixed use developments. However, these changes will require a wide range of regulatory and fiscal policy changes. Stimulating redevelopment will also require vision and leadership and fundraising through bonding and other sources. As the market for commercial development evolves, some of these changes could happen through development incentives and performance zoning. Ultimately, Kent East Hill offers the ability to test the transportation, air quality, and physical activity benefits of suburban retrofits for countywide application.

HISTORICAL DEVELOPMENT

White Center is a community on the southern edge of Seattle. Twelve miles from downtown Seattle, White Center is surrounded by steep hills and sandwiched between the Duwamish River and Puget Sound.

White Center was once known as 'Rat City' – the exact origins of this nickname are uncertain, but they include reference to the 'rink rats' who crowded the Southgate Rollerdome, to the military's Relocation and Training (RAT) Center that operated during WWII, and even to a past rodent infestation. In any case, the nickname is a hint White Center's status within the larger region of Greater Seattle. White Center lies partly within the City of Seattle boundaries and partly in unincorporated King County. Roxbury is the street that divides the community – City of Seattle to the North, and unincorporated King County to the South. The area to the north of Roxbury is also known as Westwood/Highland Park.

White Center was first platted in the early 1900's. In May 1907 West Seattle annexed the land down to Roxbury Street, and then in June 1907 all of West Seattle was annexed to Seattle. The first formal business to open in White Center was the Oak Park Grocery, which was established in 1908 at the northwest corner of what is now 16th avenue and 107th street.



Historic streetcar routes, source: *West Side Story*

In 1912, the Lake Burien streetcar line opened its line along 16th Avenue, with service between Seattle and Burien. The streetcar line helped to spur development, although by 1916, settlement was still fairly sparse. By 1925 a substantial commercial center had developed along 16th Avenue around Roxbury. In 1931, King County paved the south side of Roxbury Street, and the streetcar line was shortened to terminate there. After being cut off from downtown Seattle by a landslide over the tracks, streetcar service to White Center was shut down in 1934 and replaced by bus service.

Looking south down 16th Ave. sw, 1909, source: *West Side Story*

Looking south down 16th Ave. sw, 1925, source: *West Side Story*

In 1959, White Center refashioned the 16th Avenue commercial district into a 'traffic mall'. Street Improvements included a 25 mph speed limit, concrete islands topped with shrubs and angled parking, which increased parking spaces by 80%. Unfortunately these improvements did little to stop the district's decline during the 1960's. As south King County was growing rapidly, business was drawn away from White Center by new commercial facilities in Burien as well as by the Southcenter and Westwood Village Malls.

White Center has historically been a poor, inner-ring community that served the needs of blue-collar workers and low-income families. White Center developed sporadically from 1900 through the 1930's. However, during and after World War II the area boomed into a bedroom community for workers in the Duwamish industrial area. White Center's growth was all about homes, with little investment in mixed-use buildings or in public spaces. Much of the housing stock was constructed in during the period 1941-1961 as inexpensive

housing for Boeing Plant and other industrial workers who were employed in the Duwamish industrial flats. Many of these houses are still existing, largely in their original form. As worker's housing, the houses are smaller than the average in King County – only 800 square feet each.

The large Boeing layoff in 1971 hit White Center hard and the local economy never fully recovered. It is only in the past decade that White Center has emerged as an immigrant 'gateway neighborhood' and has begun to see some re-investment.

White Center also has a reputation as a district for 'adult' entertainment. The community has a history as an entertainment destination that dates to the early 1900's when taverns, nightclubs, card rooms, pool halls, and a boxing ring were located just outside of Seattle city limits in unincorporated King County to avoid the City's laws that prohibited such activities. That legacy persists - White Center's "main street",16th Avenue SW, currently has four taverns, one licensed restaurant, two nightclubs and three adult bookstores. It is true that compared to the average across King County, White Center still has more than its share of problems. It has a higher crime rate, a higher percentage of poverty, fewer students who finish High School, and more mothers who don't get prenatal care than the rest of King County.

Some people believe that White Center has suffered economical and socially because it is split by the municipal border, in addition to competition from neighboring and more prosperous commercial centers. The split in jurisdictions has meant that acquiring services and public amenities as a unified community is difficult. Police service, in particular, has historically suffered the most from this split. But it is also possible to notice the differences in the maintenance and configuration of the public realm of the street – street trees are present on Delridge within the Seattle City Limits, but are lacking on 16th within unincorporated King County.

The White Center Community Development Association has expressed concern that the risk of crime, associated dangers, and the perception of its high crime rate keeps many potential residents, shoppers, businesses, and investment from coming to White Center.

However, White Center's reputation is changing. Its welcoming and diverse population, relatively large residential lots, inexpensive housing costs and fifteen-minute commute to downtown Seattle have recently attracted attention proportionate with the metropolitan area's increasing diversity, real estate prices and traffic problems.

Socially, White Center is experiencing dramatic and accelerating changes from the arrival and settlement of immigrants and refugees from all over the world. This has transformed White Center from a primarily white neighborhood into Seattle's most culturally diverse community over the past ten years. White Center it is a 'gateway' community, attracting recent immigrants due to its low housing and rental prices and providing a place where

new immigrants can get a start in their new adopted country. The population includes people from Latin America, Southeast Asia, East Africa and Eastern Europe who speak dozens of languages; its large refugee and immigrant population brings a vital, entrepreneurial and cosmopolitan feel. Many new immigrants start small businesses in White Center -- it has been called "a suburban version of Seattle's International District " ("Low rental rates cultivate White Center melting pot" George Erb, *Puget Sound Business Journal,* September 23, 2002). Park Lake Homes, a King County Housing Authority housing project with 568 units, is a gateway for many immigrant and refugee communities. Park Lake Homes is about to be redeveloped with a new mixed income development that will include 900-1100 units, a two-fold increase, of which about 1/3 will be market rate housing.

Today, automobile services, ethnic groceries, restaurants and bars, and professional and neighborhood services dominate the White Center economy. The district has especially attracted immigrant entrepreneurs from Asia, the Pacific Islands, and Central America. According to the Puget Sound Business Journal, more than 30 specialty shops for racial and ethnic groups are now doing business in White Center. Inexpensive ethnic groceries, specialty shops, and restaurants have helped to create a value-destination reputation that was previously based on a concentration of thrift stores. Indeed, many White Center businesses claim that regular customers travel from up to thirty miles away.

As reported by a recent *Seattle Times* article ("White Center at the Crossroads," *Seattle Times*, November 19, 2003) White Center is being viewed as a case study for urban renewal and numerous governmental and non-governmental organizations both inside and outside the community are working on understanding White Center's problems and how they might be mended. A substantial grant from the Annie E. Casey Foundation has, over the past few years, helped to create a network of leaders for the various ethnic communities and helped to initiate the White Center Community Development Association.

Along with the redevelopment of Park Lake Homes, there is considerable public investment in White Center: two new elementary schools are (have) been built by the Highline School District and the local state DSHS (department of Social and Health Services) is opening a new center in an old grocery store that will include street level storefronts for small retailers and organizations serving ethnic communities.

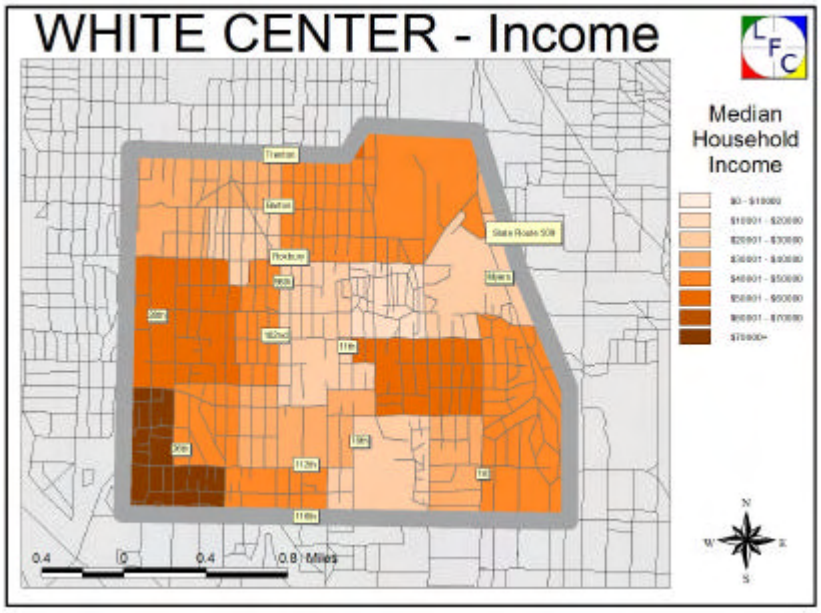
In short, White Center *is* community at the crossroads; it is undergoing significant change and development and this will mean changes to the form of the built environment. With careful investment in both private development and public infrastructure, White Center could emerge into a lively and diverse urban village.

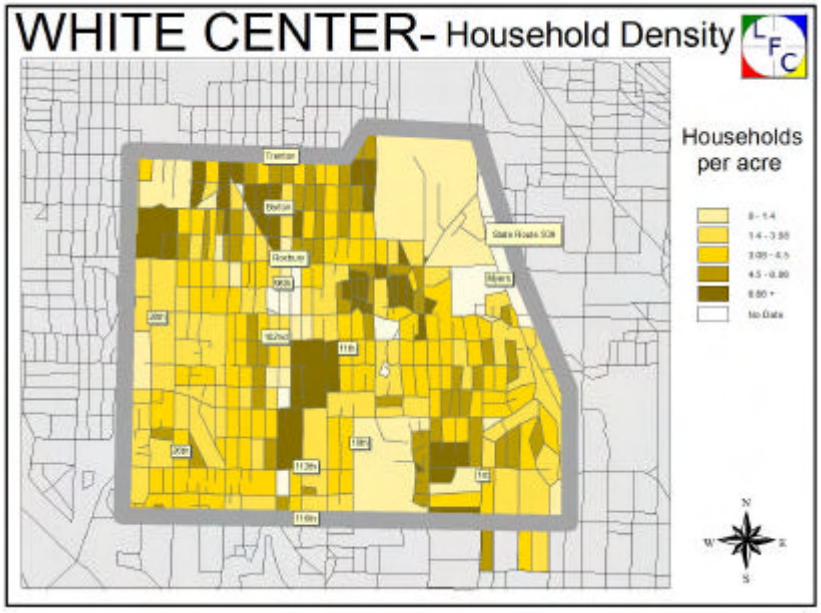
Bibliography:

'White Center at a crossroads: home-grown experiment in renewal" Stuart Eskenazi. ***Seattle Times*** Nov. 19, 2003.

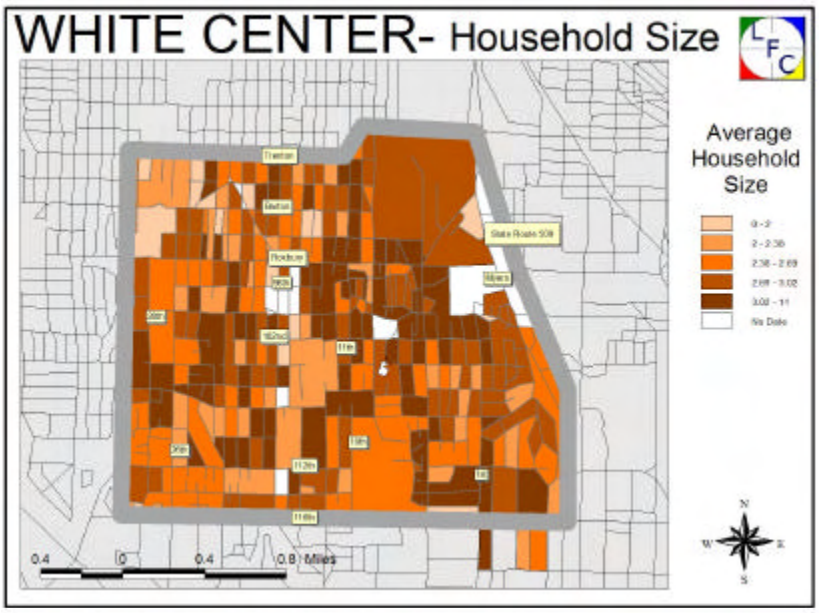
"Low rental rates cultivate White Center melting pot" George Erb ***Puget Sound Business Journal*** September 23, 2002.

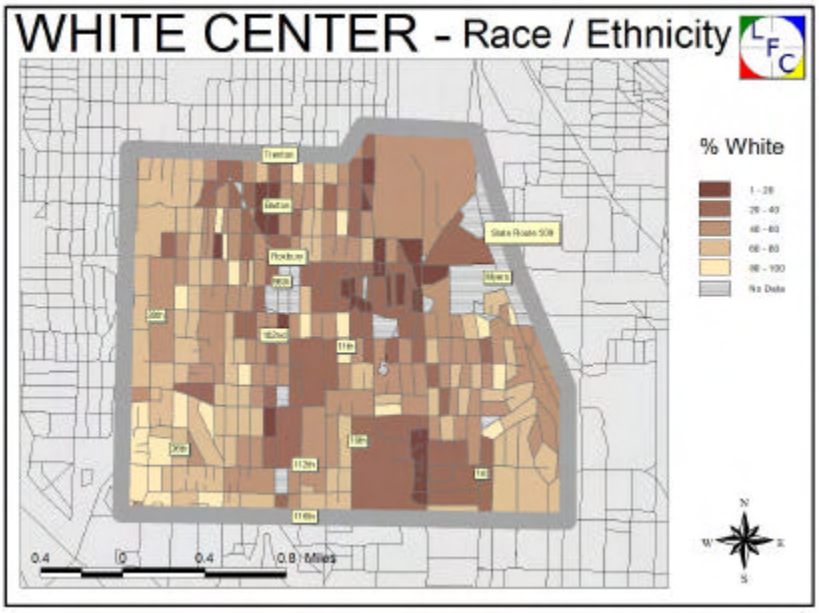
West Side Story : West Seattle Herald/ White Center News. Seattle,: Robinson Newspapers, 1987).



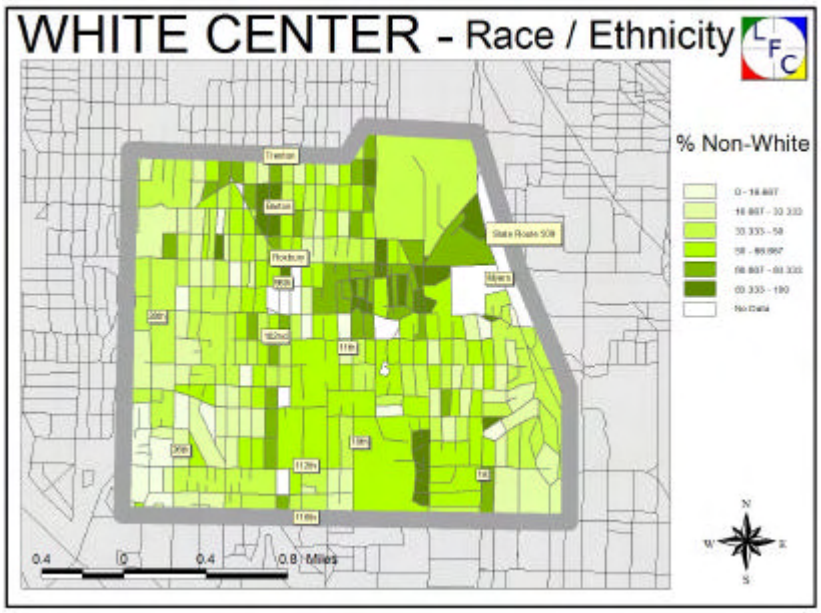


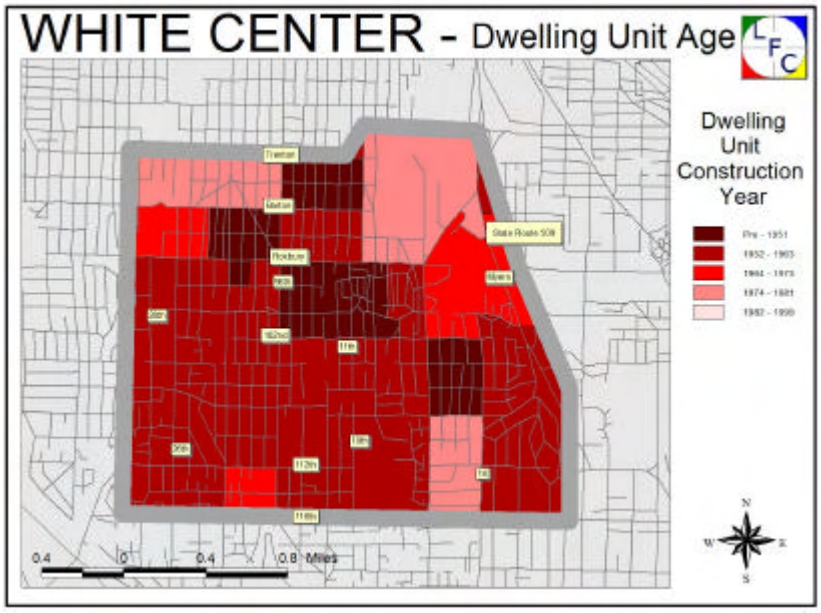
analysis:
The lowest median incomes within White Center are to be found within the site of the King County housing project, Park Lane Homes, and in the multifamily housing areas surrounding the commercial core. The Highest median income area appears to be the southwest corner, closest to the ocean. The higher densities in White Center are to be found where there are large multifamily housing projects such as Park Kane Homes. Some sections of the commercial core have no residential. The half of White Center that is within the City of Seattle on average, has more residential density than in King County.





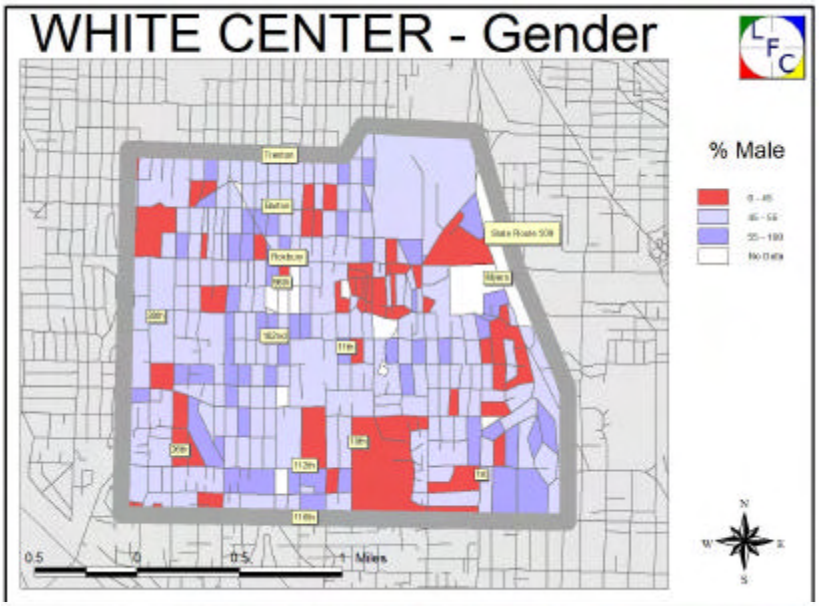
analysis:
Larger household sizes are spread throughout White Center, but there may be some connection to the presence of multifamily housing. It is possible to note that households immediately within the 16th street corridor are smaller.
White Center is a diverse community – there are many areas where Whites are the minority. One area where there is a large concentration of white residents is in the southwest quadrant.

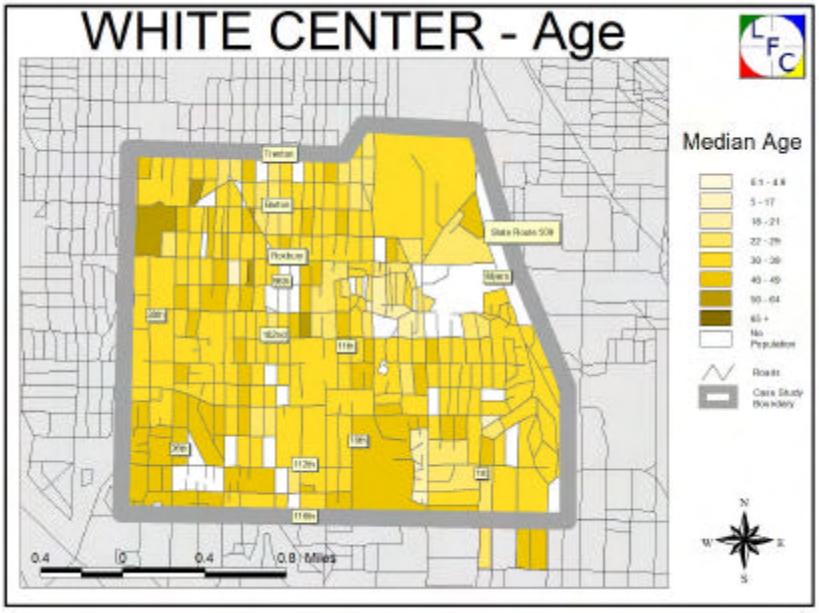




Analysis:
While White Center is one of the most diverse neighborhoods in the greater Seattle area, it is possible to note concentrations of non-white residents in and around Park Lane Homes.

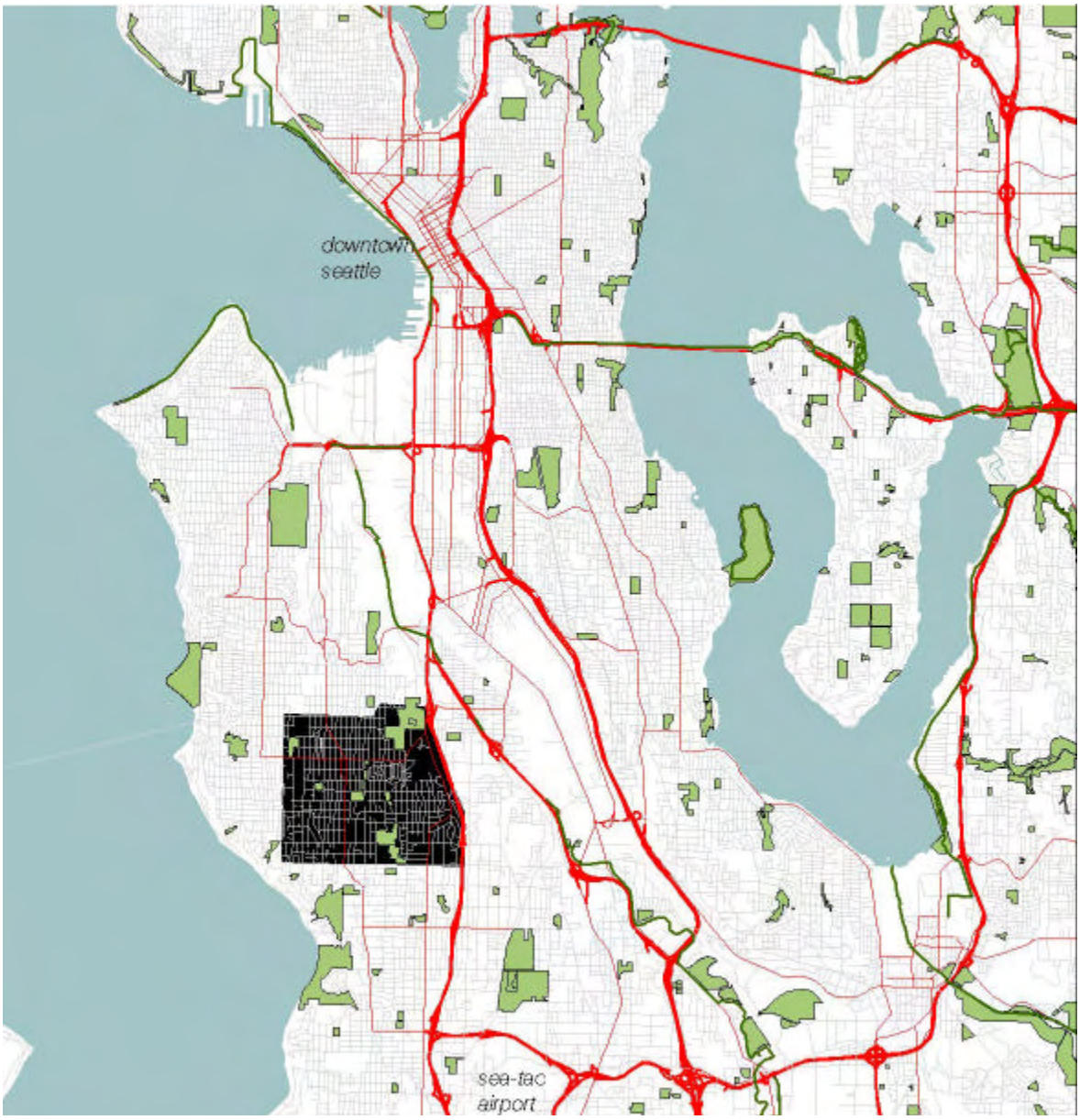
The oldest dwelling units are to be found near the intersection of 16th and Roxbury, as this is where the streetcar stop was located – development grew first around the streetcar stops and lines.





analysis:
While there mainly seems to be an even distribution of genders, as might be expected, there is a larger proportion of females living in and around Park Lane Homes and other multi-family housing projects.

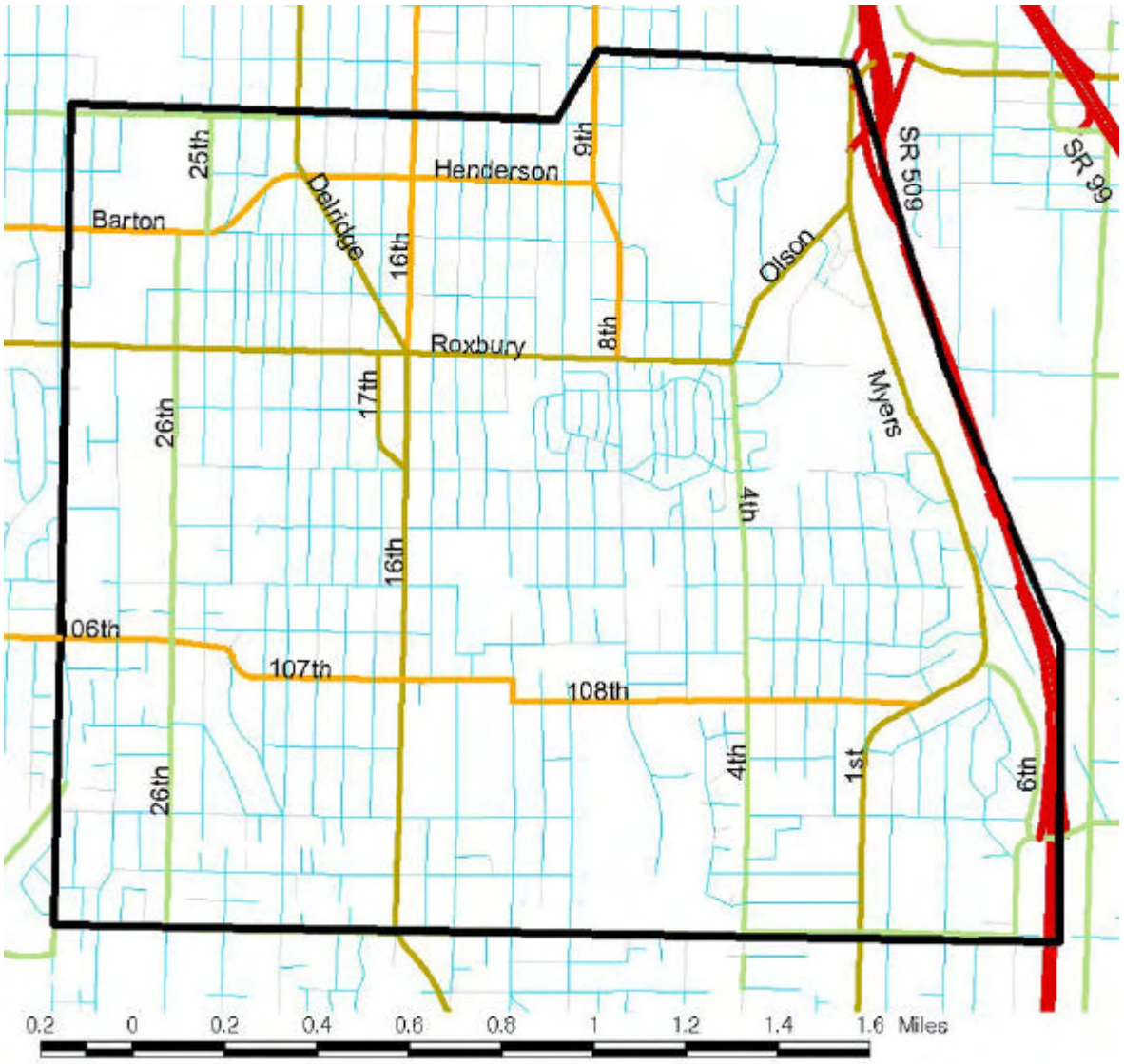
There is a fairly even distribution of age in White Center, but there are a couple of pockets of higher concentrations of elderly people, most likely reflecting the presence of retirement or care facilities.



analysis:
White Center is located about 12 miles southwest of downtown Seattle. It has easy access to SR 509, 518, 99 and I-5. It is surrounded by steep hills and sandwiched between the Duwamish River and Puget Sound and it is relatively close to both Sea-Tac Airport and the Fauntleroy ferry terminal.

map legend:
- Trails
- King County Parks
- Transportation Network
- F
- M
- P
- C
- L
- Water
- White Center

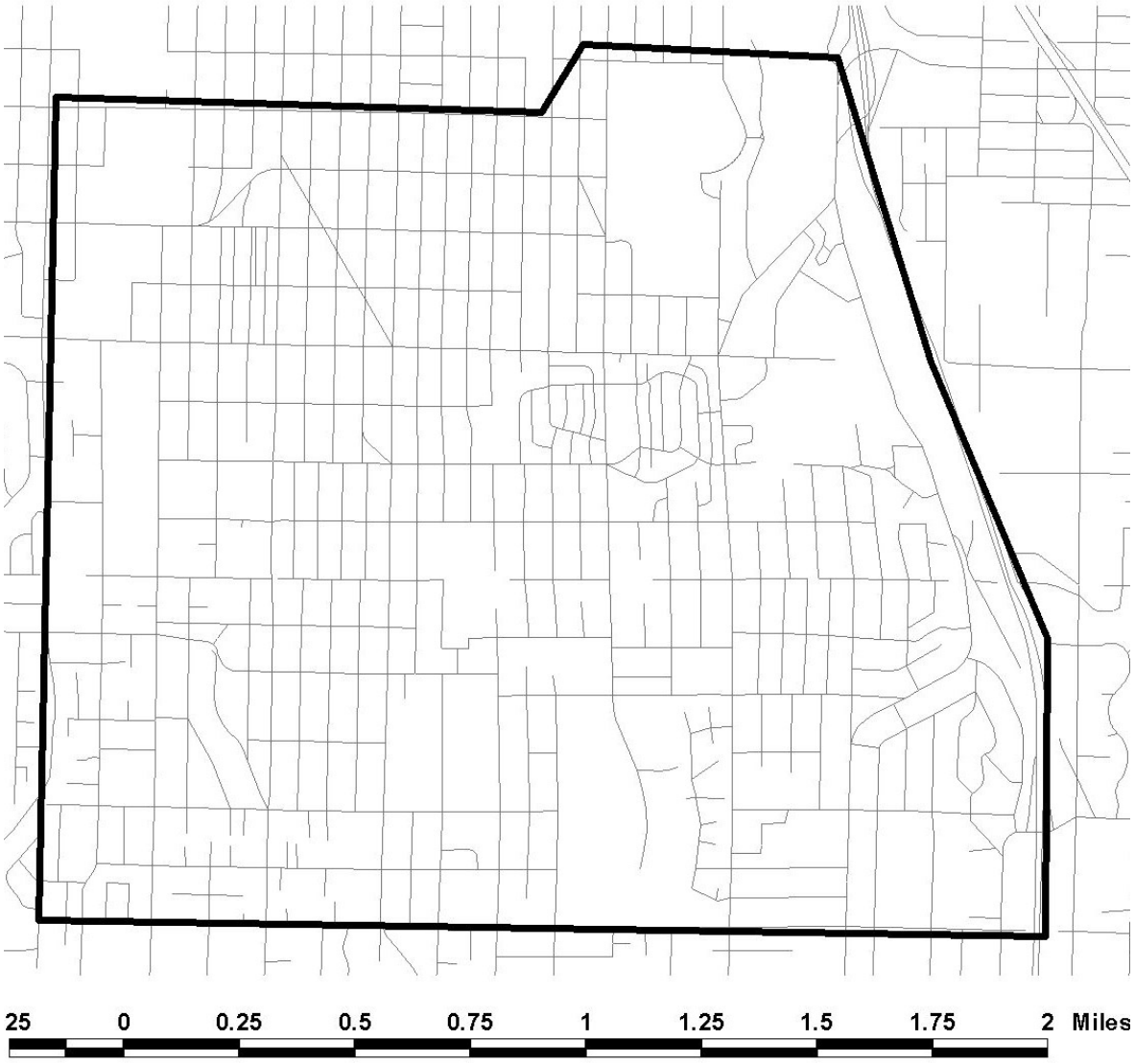
White Center – Regional Transportation



analysis:

White Center's grid includes arterials and collectors at relatively regular intervals. The 'center' of White Center is the intersection of the primary arterials of Roxbury and 16th Ave. SW.

White Center – Road Hierarchy



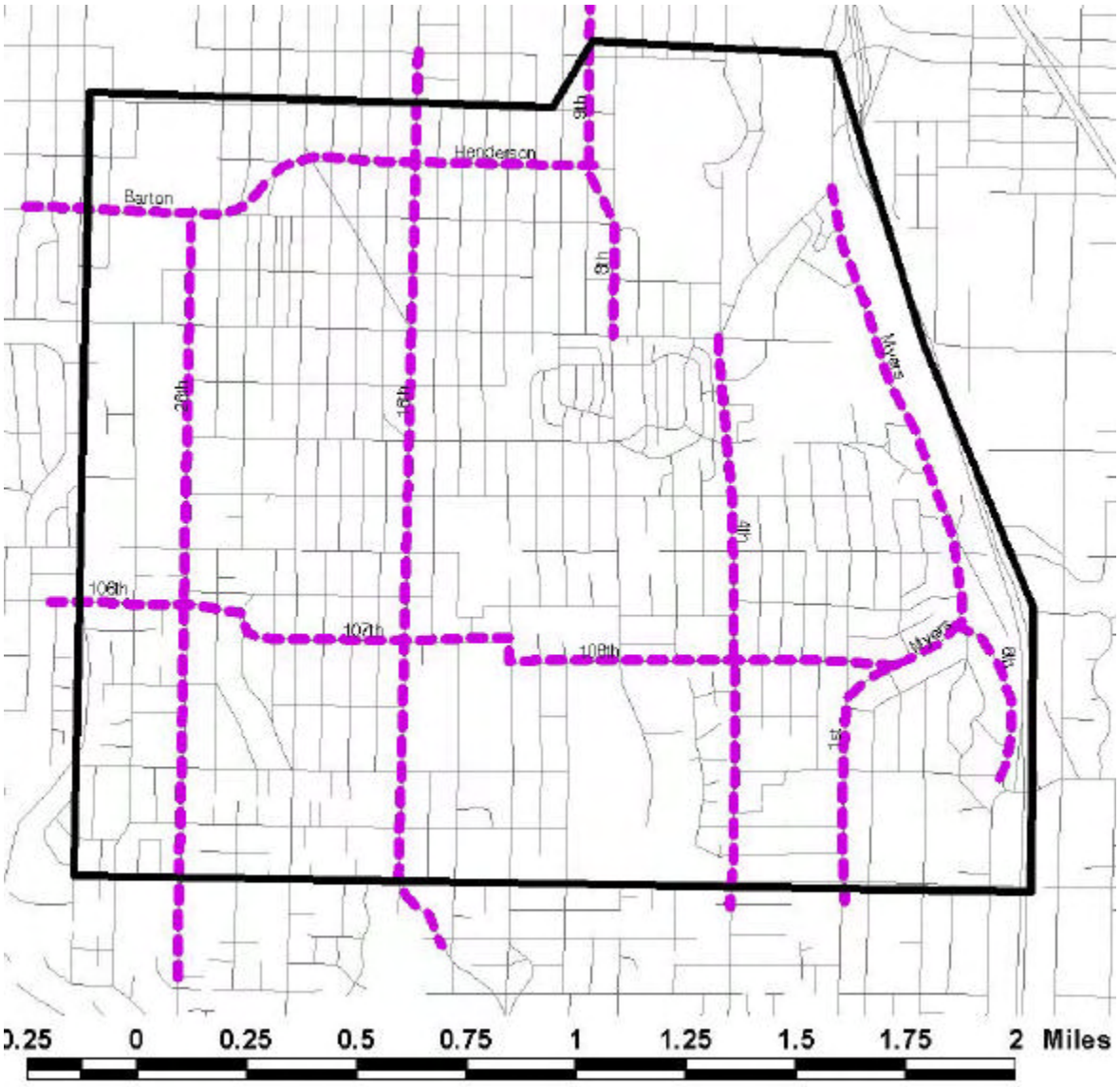
analysis:

White Center's grid-iron street network is indicative of its early 20th century vintage. Breaks and gaps in the grid are usually due to significant topography or the presence of a large park. The mid-20th century development of Park Lane Homes is evident by its unique street pattern.

map legend:

White Center Boundary
Street Network

White Center – Street Network



analysis:

Existing City of Seattle and King County bike routes have been placed on arterial and collector streets, but so far, all of these routes are un-marked.

map legend:

White Center Boundary
WC Bike Routes-unmarked
WC - Streets

White Center – Bike Routes

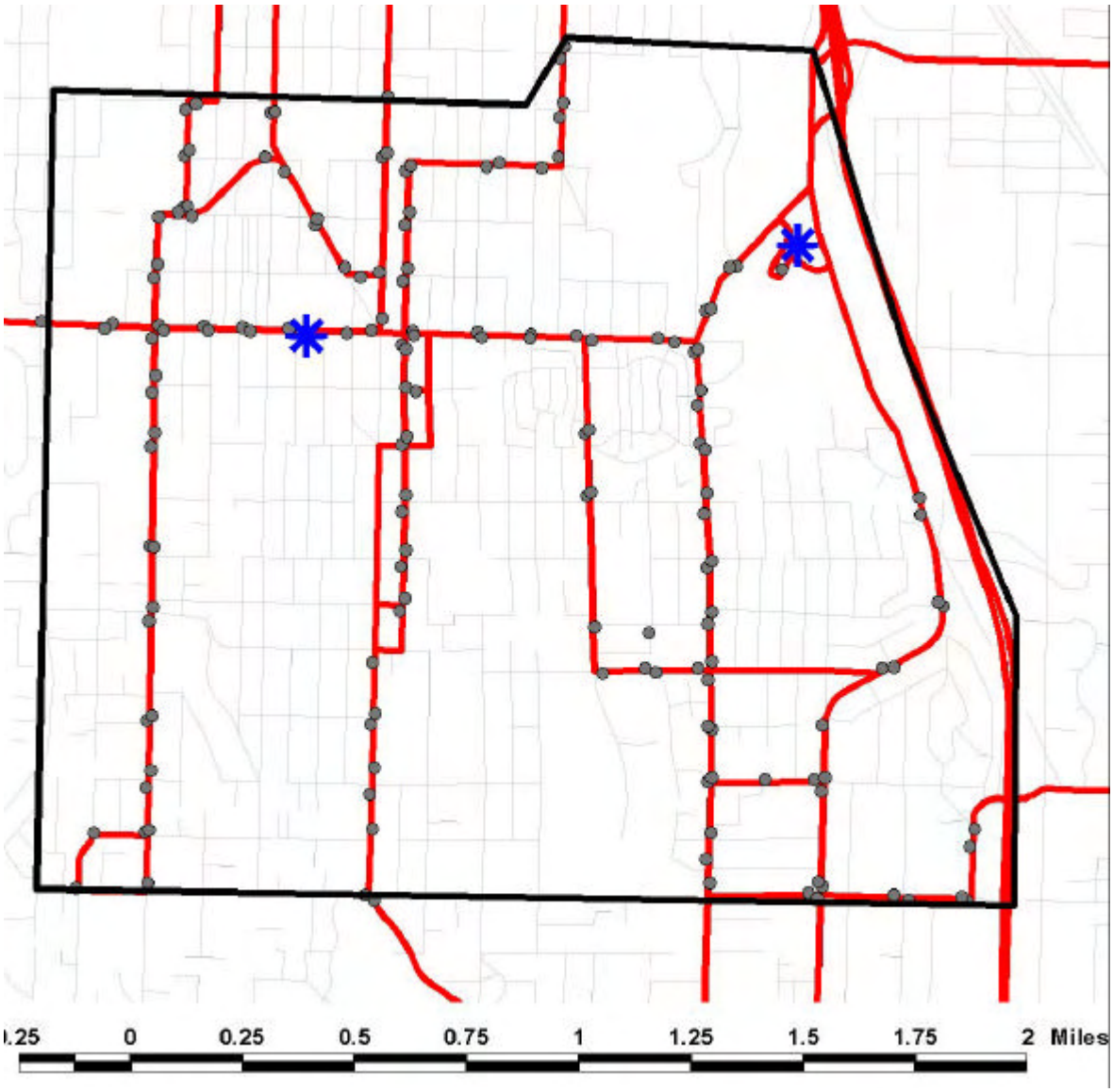
analysis:

This sidewalk inventory was produced through field observation. The City of Seattle side of White Center has many more sidewalks than the King County side (south of Roxbury). On the King County side sidewalks are primarily present on arterial and collector streets only. So, while the street connectivity within White Center is high, given its gridiron form, pedestrian connectivity is significantly lower.

map legend:

- Whitecenter_boundary
- WC-Sidewalks
- Buildings
- White Center Parcels

White Center – Pedestrian Network



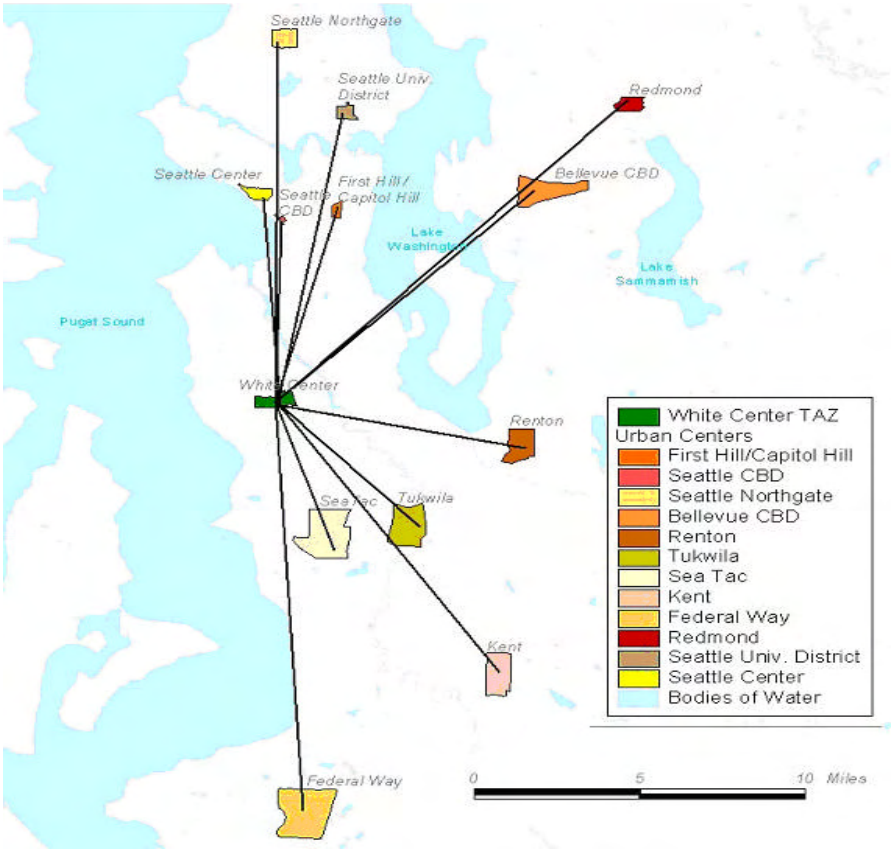
analysis:

There are 12 bus routes which serve White Center – 8 which are daily, 3 are weekday only, and 1 which is a night route. Most of the routes run north-south connect White Center to Downtown Seattle via either other neighborhoods in West Seattle, or via South Park, Georgetown, and Beacon Hill. There are both local and express routes. There is a southward focused route (#128) which connects a number of West Seattle neighborhoods to Tukwila and Southcenter Mall. The only real east-west connection is a Sound Transit route that goes from Bellevue to West Seattle, via Renton, Sea-Tac Airport, Burien, White Center and Fauntleroy.

map legend:

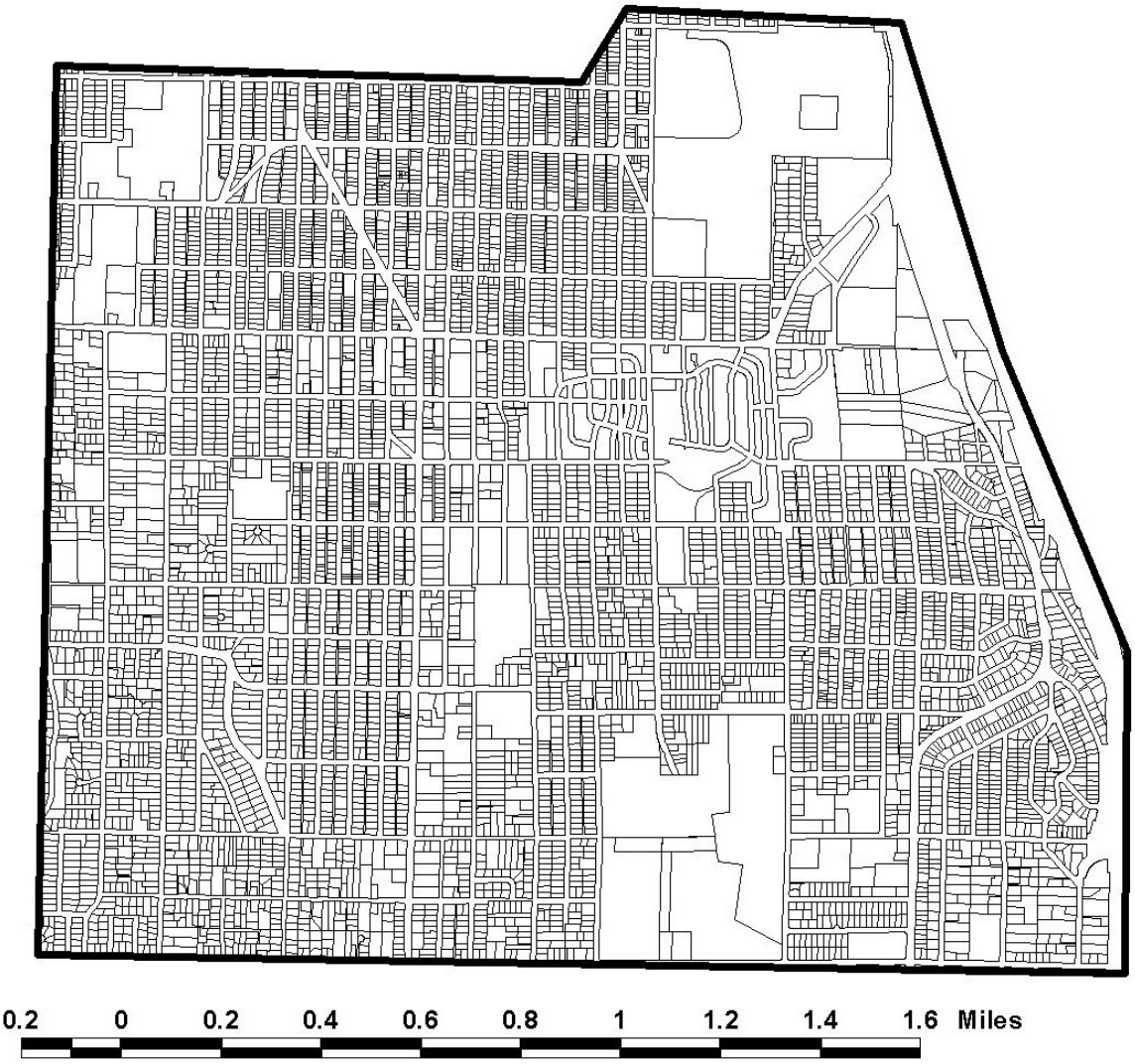
- Study Area Boundary
- Park and Rides
- Bus Stops
- Bus Routes
- Street Network

White Center – Transit Routes



Created 12.17.02

Travel Times from White Center						Transit - SOV Travel Time	
	SOV			Transit			
Destination	**AM**	**PM**	**OP**	**AM**	**OP**	**AM**	**OP**
Seattle Northgate	25.56	25.73	24.87	80.96	82.82	55.4	57.95
Seattle University District	25.53	25.39	24.62	81.47	81.52	55.94	56.9
Seattle Center	17.93	17.27	17.15	59.27	61.12	41.34	43.97
First Hill/Capitol Hill	17.67	17.6	17.27	62.45	64.57	44.78	47.3
Seattle CBD	14.76	13.9	13.79	38.77	41.51	24.01	27.72
Bellevue CBD	30.97	32.41	31.17	101.24	109.98	70.27	78.81
Renton	22.5	24.61	23.43	103.55	108.06	81.05	84.63
Tukwila	16.15	16.59	16.15	69.79	71.72	53.64	55.57
Sea Tac	14.99	15.36	15.03	72.07	69.9	57.08	54.87
Kent	28.96	34.81	31.06	126.8	129.53	97.84	98.47
Federal Way	30.87	37.74	33.51	110.19	111.13	79.32	77.62
Redmond	37.8	41	38.5	106.24	107.9	68.44	69.4
Based on White Center as TAZ 333							



analysis:

White Center's small parcels reflect the fact that it was laid out and platted in the early part of the 20th century. The majority of the parcels in the White Center case study area are single family lots of around 5,000 sq. ft each. Larger parcels within this area tend to contain either parks, large retail development, or large multifamily developments.

map legend:

Study Area Boundary
Parcel Boundaries

White Center – Parcels

analysis:

White Center consists of numerous small blocks, averaging about 600 feet long x 270 feet wide. Many of the blocks also have back lanes, making the net block size even smaller. The small block sizes and the grid iron pattern reflect White Center's early 20th century vintage. White Center shares this typical platting pattern with other 'streetcar suburb' neighborhoods in Seattle, such as Wallingford and Queen Anne.

map legend:

Study Area Boundary
Blocks

White Center – Blocks

analysis:

This figure/ground analysis reveals that the majority of structures within White Center are small single family houses neatly lined along straight streets. Retail cores are clearly visible as either agglomerations of larger commercial buildings, or as large box retail surrounded by the empty space of parking lots. Other large empty spaces in White Center are Park and open green spaces.

map legend:

Study Area Boundary
Building Footprints
Parcel Boundaries

White Center – Figure/Ground

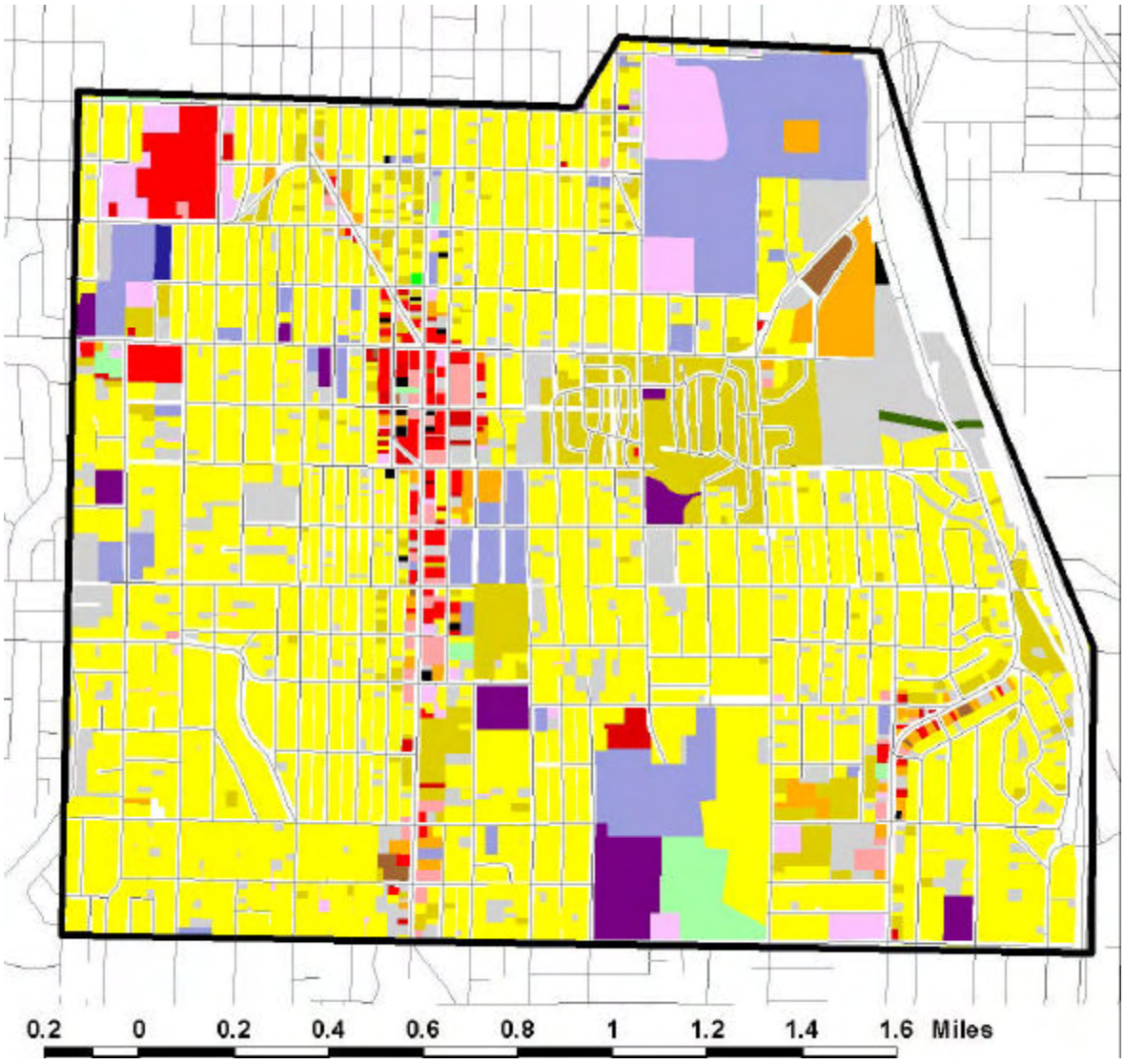
analysis:

White Center has a high intersection density when compared to the other two case study areas. This map reveals that the street intersections in White Center are laid out in a consistent and connected grid pattern, resulting in a high degree of street connectivity.

map legend:

Study Area Boundary
Intersections
Street Network

White Center – Intersection Density



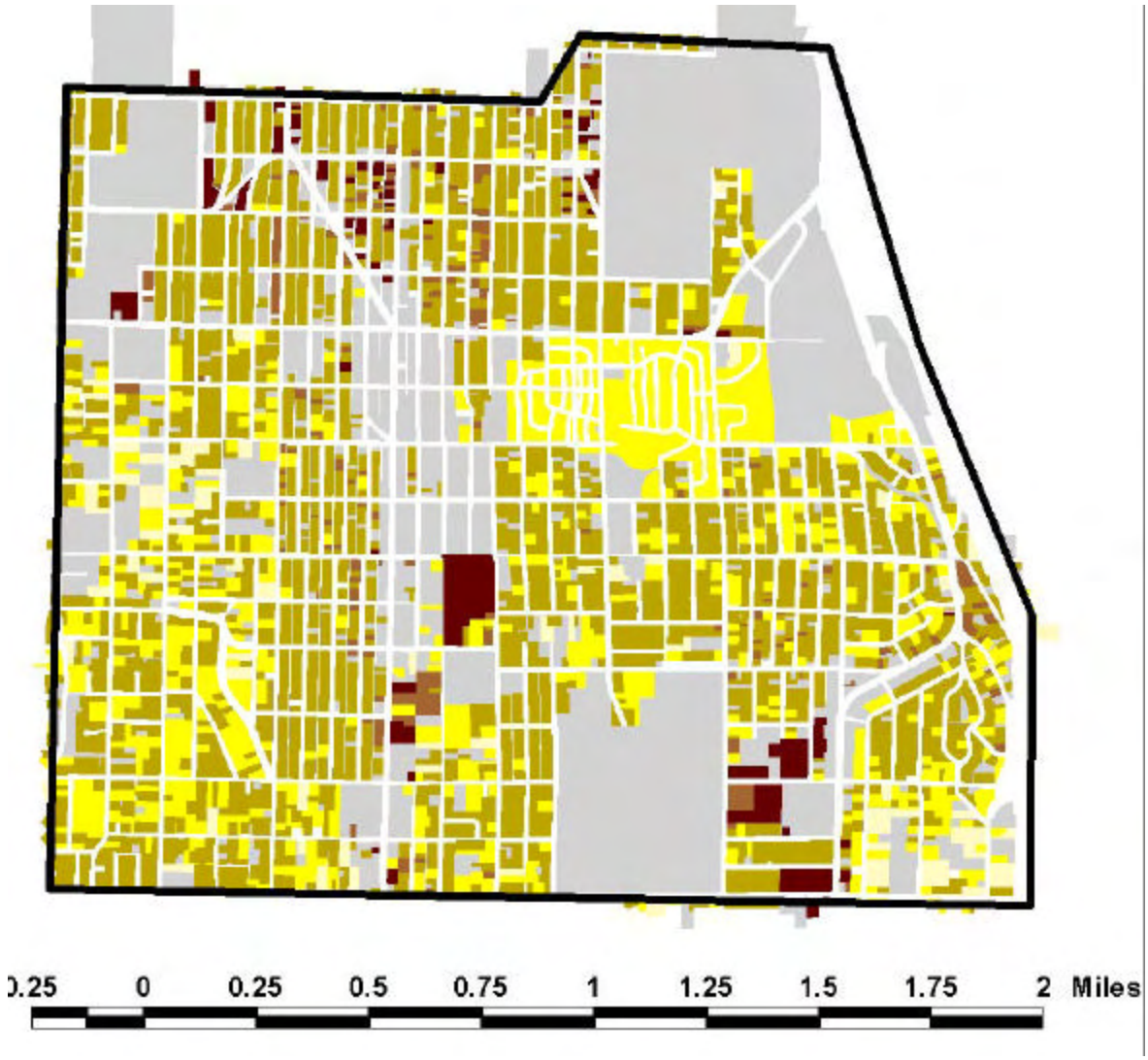
analysis:

The pattern of land uses in White Center reveals that, again, the majority of the area consists of single family houses, while retail is concentrated into 3 distinct nodes: the 16th Avenue commercial core, a small retail center on 1st Avenue (southeast corner of the site) , and the big box retail shopping mall of Westwood Town Center (northwest corner of the site). Multifamily development tends to be found adjacent to commercial areas, although the large King County housing project of Park Lane Homes is, in essence, a node unto itself.

map legend:

- WC Study Area Boundary
- Parcel Boundaries
- Single Family Residential
- Multi-Family Residential
- Institutional
- Civic
- Educational
- Office
- Retail
- Food Establishment
- Food Establishments
- Industrial
- Manufacturing
- Agriculture
- Open Space
- Recreational
- Parking
- Other
- Vacant
- Street Network

White Center – Land Use



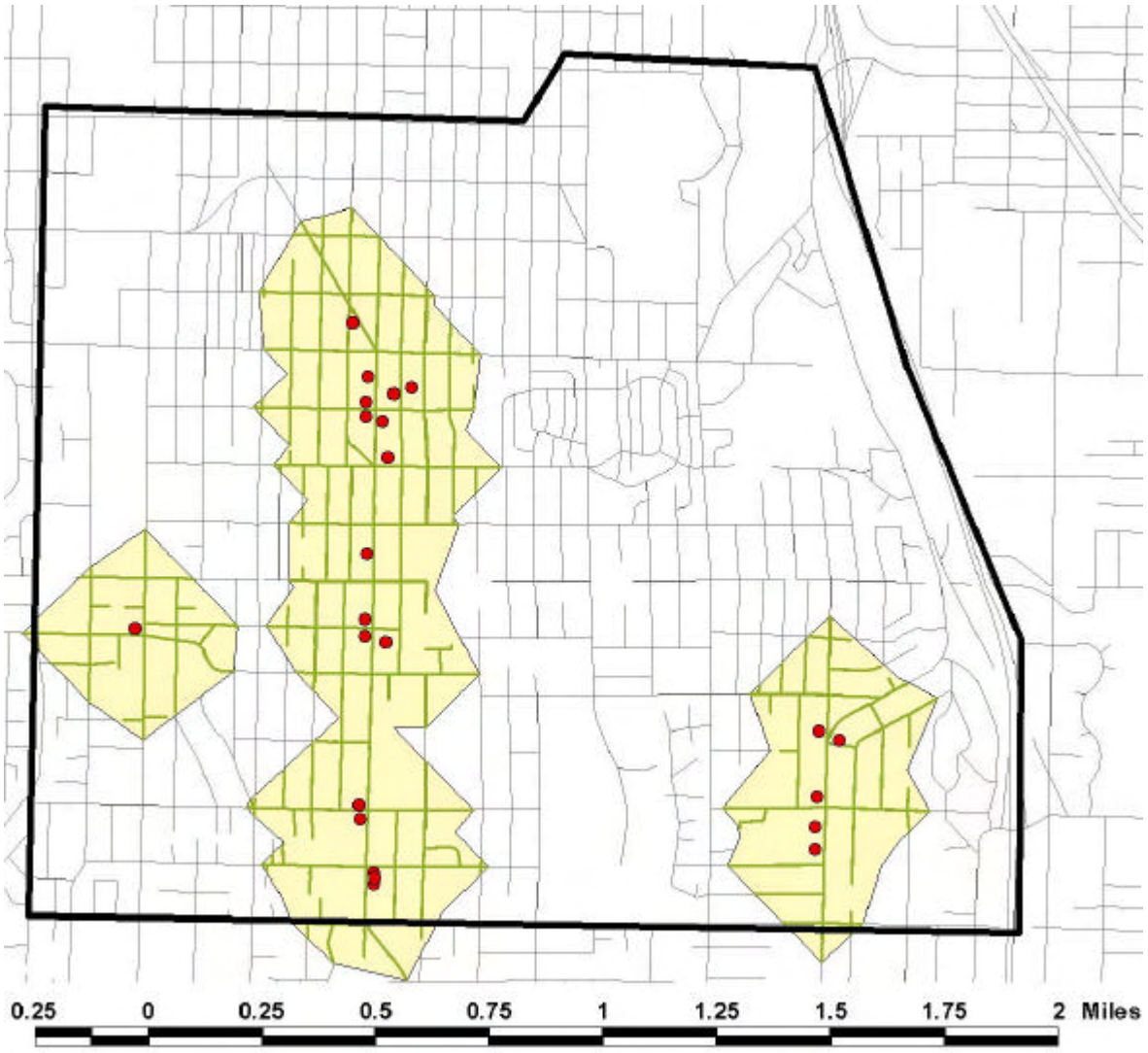
analysis:

This map of residential density reveals that the highest densities are to be found in concentrated nodes of multifamily housing. Interestingly, the residential densities of the commercial nodes is extremely low, revealing that very few residences are to be found in the commercial zones. The residential density of Park Lane Homes is also surprisingly low.

map legend:

Study Area Boundary
Residential Dwelling Units per Acre
<1 DU/Ac
1 - 2 DU/Ac
2 - 4 DU/Ac
4 - 10 DU/Ac
10 - 25 DU/Ac
+ 25 DU/Ac

White Center – Residential Density



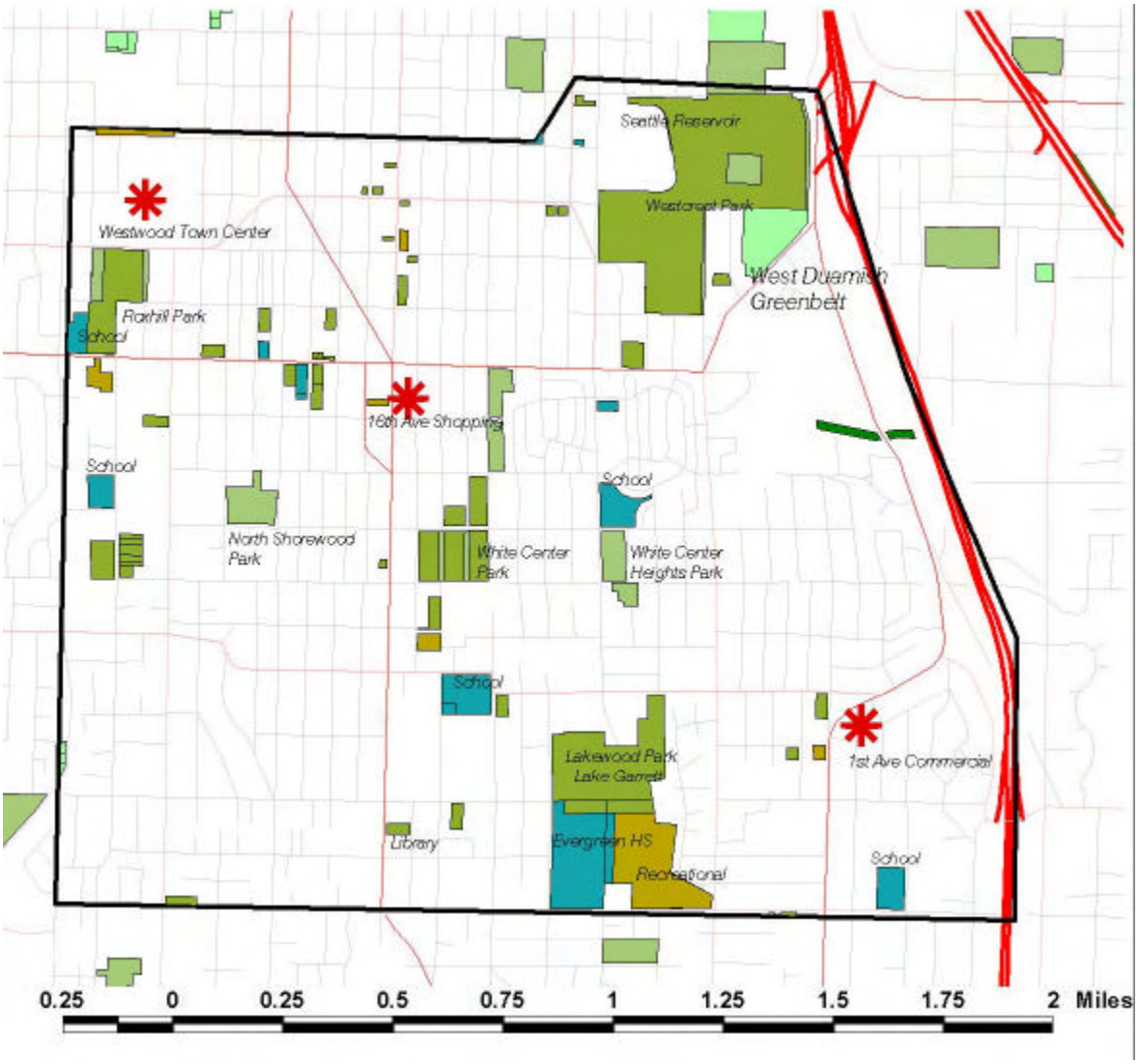
analysis:

The map reveals the amount of land area that is within a .25 mile street network walking distance of restaurants. Despite White Center's good overall mix of land uses, this analysis shows restaurants tend to be concentrated in the commercial core, and are not within easy walking distance (i.e. .25 miles or less in one direction) of most residences.

map legend:

- WC Study Area Boundary
- Restaurants
- WC network .25mi
- WC .25 mi buffer
- Street Network

White Center – .25 mi Restaurant network buffer



analysis:

This map shows that White Center contains a good number of small parks which are pretty well spread throughout the neighborhood, although the southwest quadrant is somewhat lacking. It also reveals that large recreational parks are to be found on the periphery of the neighborhood. Many of the schools in White Center are located next or close to park and recreation facilities.

map legend:

WC public spaces
Civic
Educational
Open Space
Recreational
Vacant
Trails
White Center
King County Parks
Transportation Network
F
M
P
C
L
Seattle Parks
Water

White Center – Public Spaces

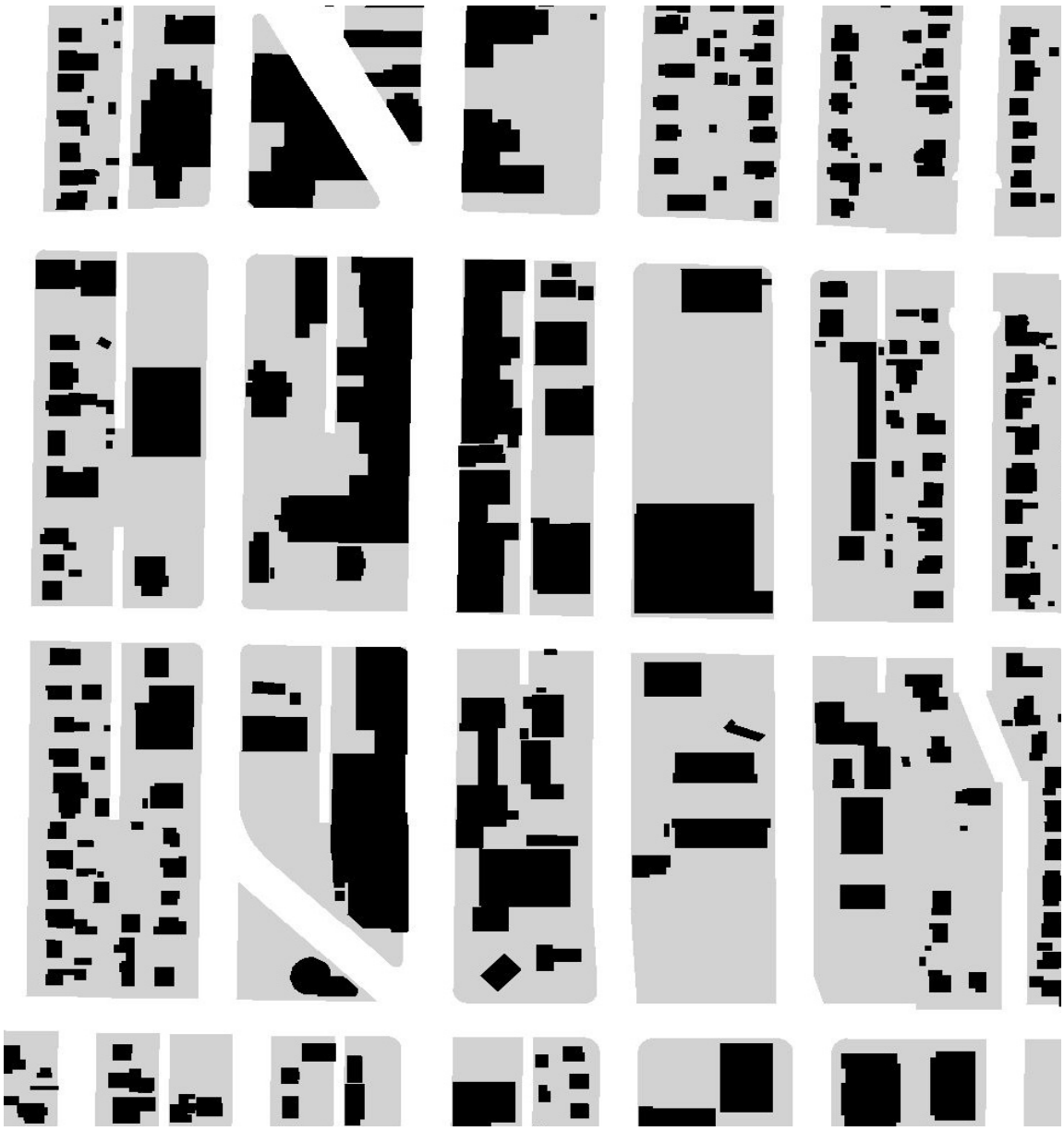
analysis:

There are not very many vacant parcels in White Center – many of those coded as vacant are actually parks or green belts. However, there is a significant number of vacant parcels within the commercial core, revealing that there are (re)development opportunities in this area.

map legend:

- Building Footprints
- Parks
- WC-Vacant
- Study Area Boundary
- Parcel Boundaries

White Center – Empty/vacant Parcels



analysis:
This figure/ground map shows that while there is a good solid street wall of commercial buildings along 16th avenue immediately north and south of Roxbury, there are also many parcels that are vacant or used for surface parking. Many of the newer commercial developments along 15th and 17th are oriented to automobiles, providing extensive parking in lots surrounding their buildings, resulting in a lot of 'lost space'.

map legend:

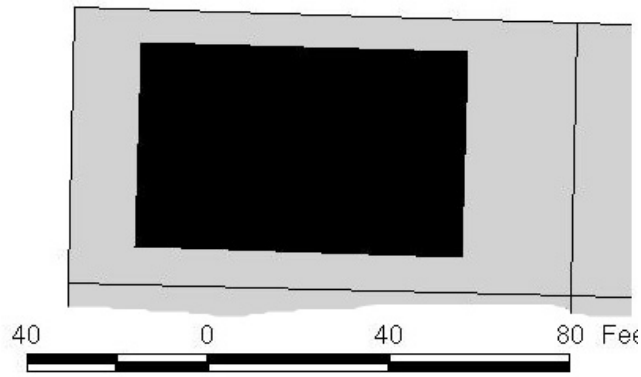
Study Area Boundary
Building Footprints
Parcel Boundaries

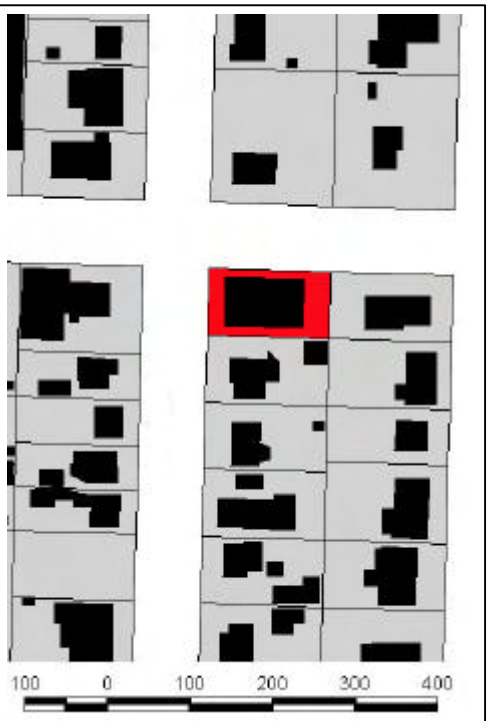
White Center – Figure/Ground - commercial core

analysis:

This is a typical new retail development on 15th Avenue south of Roxbury. The building is located at the back of the lot, so as to provide ample parking for its customers. However, by doing this it provides little definition to the public streetscape and creates a walking environment full of curb cuts and cars that cross the sidewalks, creating possible points of conflict between vehicles and pedestrians. There are a number of these small generic retail buildings in White Center which provide small retail spaces for the area's numerous and popular immigrant businesses. The cumulative effect is the degradation of the pedestrian environment due to numerous curb cuts in the sidewalk, the lack of any storefronts adjacent to the sidewalk, and the absence of a 'street wall'.

White Center – Typical Retail development



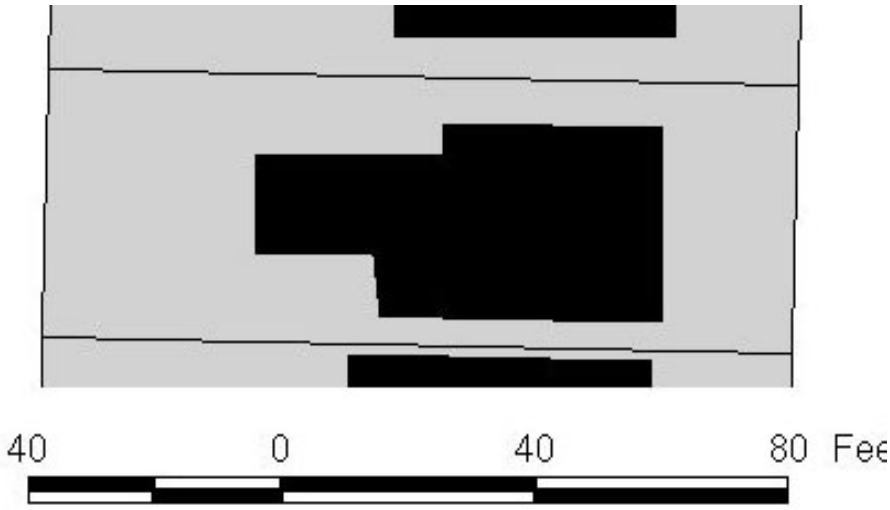


analysis:

This is an example of a multifamily development that has been infilled into a single family site. While the structure is efficient in terms of providing a higher residential density, its form does not provide many amenities for residents or for the public street environment, residents lack useable access to outdoor space, and the building essentially turns it side to the street.

map legend:

White Center – Typical Multi-family development



Lot size = 4970 sq. ft

Structure= 840 sq. ft

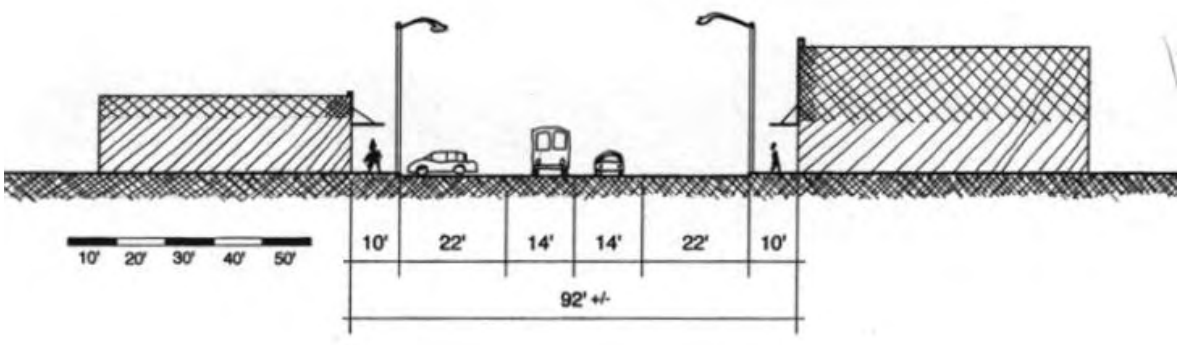
FAR = 0.16

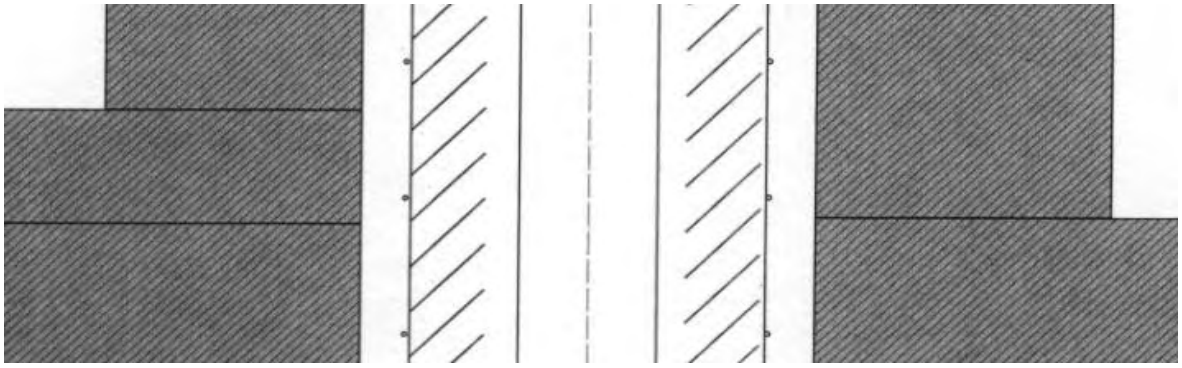
2 bed/1 bath

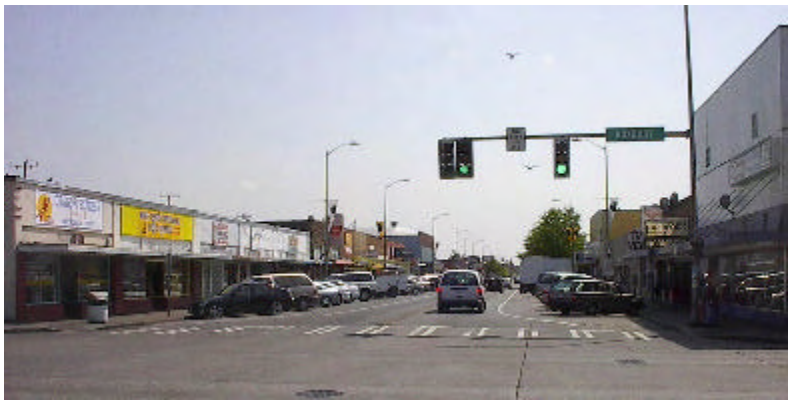
analysis:

Many of the single family houses in White Center were built during and after WW II to house workers for the Boeing plant and other manufacturing firms. The houses are relatively small, but are on normal size (about 50' x 100'/ 5,000 sq ft) single family lots, resulting in a low net density for the neighborhood. Many of the single family blocks in White Center have back lanes, providing access to garages, carports and secondary structures in the back of the single family lots.

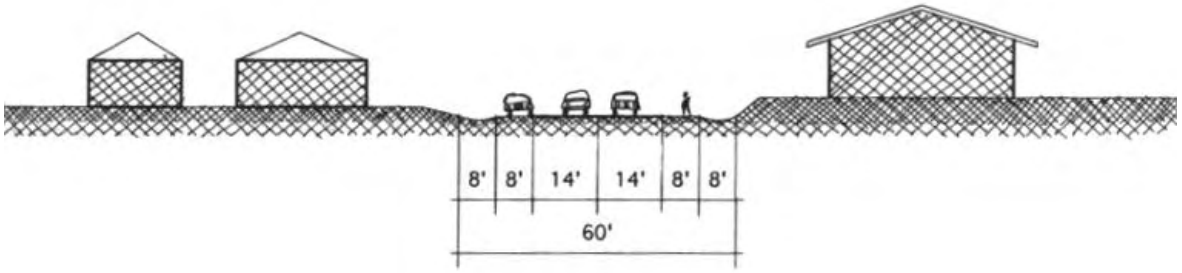
White Center – Typical Single-Family Development

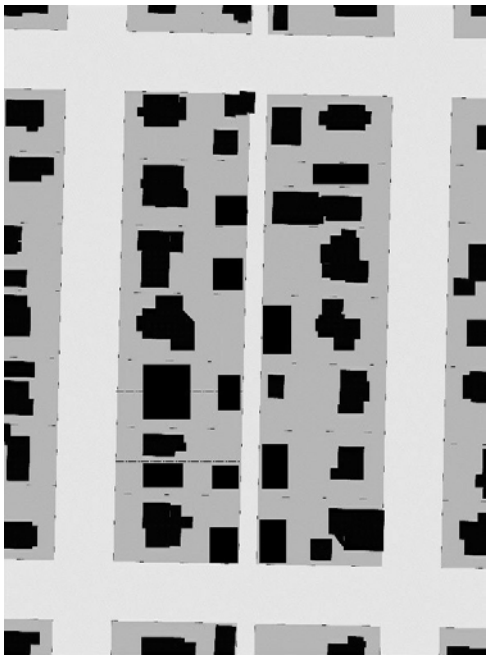






analysis:
16th Avenue SW possesses the essential form of a traditional 'streetcar suburb' commercial street: it has a larger right-of-way than the surrounding streets, and commercial buildings are built up to the property line, providing a consistent street wall and giving definition to the public space of the street. While the total right of way is ample, the sidewalks are still relatively narrow in relationship to the overall width of the street.





analysis:

Many of the residential streets in White Center do not possess sidewalks or a formal drainage system. The lack of distinct sidewalks means that there is also a lack of distinct parking zones, and cars tend to park in and on spaces that pedestrians would also want to use. At the same time, many of the residential blocks contain back alleys which provide additional access to individual lots.

Summary of Existing Urban Design Conditions

White Center is a relatively low-income community within King County, and it has the lowest median income when compared to the other two case study sites. There is a diversity of incomes within the site, however - the lowest incomes are to be found in the vicinity of Park Lane Homes, and the highest incomes are to be found in the southwest corner of the case study site. It is one of the most ethnically diverse communities in King County – 54% of its population is non-white and it has become a gateway community for immigrants in recent years, particularly due to immigrants from Southeast Asia, Latin America and eastern Europe. These diverse populations tend to be located around the commercial core of White Center, in the King County housing authority project Park Lane Homes, and in other concentrations of multifamily housing. White Center also has the largest average household size when compared to Redmond or Kent East Hill; this may be connected to its large immigrant population. It has a relatively high rate of housing occupancy – 96.5% - higher than both Kent and Redmond. Of the three case study sites, White Center also has the oldest median date of housing unit construction, reflecting the fact that it is an older residential community with its beginnings in the early 20th century. Its development pattern was very much affected by both the presence of Burien streetcar line than ran down 16th Avenue SW, and by the post WW II boom in industrial production - much of the housing in White Center was built as housing for Boeing employees and other workers from the Duwamish Industrial lands.

In terms of its transportation facilities, White Center has easy access to SR 509, which provides an efficient link to downtown Seattle as well as to Sea-Tac Airport. The vintage of the community is reflected in the design of its street network - White Center is an early 20th Century classic streetcar suburb with a gridiron layout of streets and blocks. Blocks are about 600ft long by about 270 feet wide and many have back lanes. White Center lies partly within the City of Seattle, although the more substantial portion of the case study area is within unincorporated King County. This jurisdictional split is evident in the pedestrian infrastructure - most streets within the boundary of the City of Seattle possess sidewalks, whereas within King County only arterial streets, and those proximate to the commercial core around 16th Avenue SW, have sidewalks. While there is an apparent network of bike routes, mainly along arterial roads, none of these routes include marked bicycle lanes or signage.

From the analysis of existing land use and urban design conditions, it is evident that White Center possesses a classic distribution of land uses. Commercial and retail can be found along the 16th Ave. SW corridor, in the Westwood Village shopping mall, and a small cluster along 1st Ave. SW. White Center contains a good overall mix of land uses and community services, with numerous parks and schools. There is little to no residential density to be found in the commercial areas, and there are few, if any, mixed use developments; in

other words, there is a fairly strict separation of land uses. Overall, White Center has a relatively low residential density. Most of the community consists of single family homes. White Center has a high intersection density and a high degree of street connectivity due to its grid iron street network. However, because of the lack of residential density within and close to the commercial cores, few people really live within walking distance of retail destinations. While there is a connected street network, when one takes a closer look, the lack of connectivity for pedestrians and bicyclists is significant, as many of White Center's streets lack sidewalks. They also lack formalized drainage (which is partially why there are no sidewalks). Formal drainage systems provide a curb and gutter system, and as a result, a greater separation of pedestrian walking space from the roadway. Without adequate drainage, the amount of standing water during the wetter months becomes a problem for pedestrians and bicyclists. While there is high street connectivity in White Center, pedestrian facilities (sidewalks and paths) are not as prevalent, making the area less walkable than might initially be thought.

In short, it is possible to suggest that White Center has 'good bones' - a good framework that requires some attention to the details of urban design and a greater concentration of people living in and around the commercial core. It is a community that has a well-connected network of streets, but lacks the pedestrian infrastructure and the required residential and commercial density that would help promote walking.

White Center has many assets:

- a good amount of park space with a number of large parks within its boundaries
- gridded street network with high connectivity
- demographic/ethnic diversity of residents, a regional attraction, a cultural asset
- capacity in the transportation systems that serve it

However, it also has specific deficiencies:

- lack of sidewalks and pedestrian routes
- lack of people living in and adjacent to the commercial core
- a well developed identifiable center

Kent – historical development

The town of Kent was officially incorporated on May 28, 1890- the second community in the State of Washington to incorporate. Prior to being settled by white persons, Kent was dominated by the Green River Valley – abundant salmon and steelhead in the river, deciduous trees and underbrush in the lowlands, and densely forested hillsides. The Native American population who lived in the area relied on the abundant salmon and steelhead in the rivers and the abundant wildlife.

The first white settlers arrived in 1853 and established a claim southeast of what is now downtown Kent. Kent first made its name as a center for hops, but by the 1890s the hop boom was over and there was a shift in agricultural to grassland and dairy farming. The Carnation Milk Company manufactured its first can of Carnation Milk in Kent in 1899. By the 1920s Kent became a center for vegetable or truck farming due to the many European and Japanese Immigrants who settled in the area. Japanese immigrants farmed much of the valley from the 1920's until 1942 when, due to World War II, the Japanese Immigrants were evicted and interned. Less than one third of the original Japanese immigrants returned to resume farming; this precipitated a decline in farming and a gradual turnover to industrial uses. By 1960 major forces were working to change the character and nature of the entire Kent area, but especially the valley floor. Valley lands were attractive to developers due to their flat terrain and proximity to major rail lines and other transportation routes – including proximity to Sea-Tac airport. Warehousing and distribution became an increasingly important part of Kent's industrial development during this period.

The agriculture that once defined Kent and made the valley green has given way to the southward spread of warehouse and distribution centers serving the greater Seattle area. The character of Kent had changed significantly by the 1980s. Not only had the City's population increased significantly, but also the character of the housing stock had changed dramatically. Before 1960, most (90%) of Kent's housing stock was single family, but by 1980, the development of multi-family had far outstripped the production of single family, so that in 1992, only 32% of Kent's housing stock was single-family, while multi-family housing had endured a growth rate of 250%. However, in the past decade multi-family housing has not been built at such a fast rate, and the stock of single family housing has risen in percentage.

As the comprehensive plan update concludes: *"In the past few decades, Kent has been transformed from a small, primarily residential and agricultural community onto an employment and population center for south King County … While this growth has brought some benefits … it has also produced urban sprawl, congested streets, and increased demand for community and human services, as well as threatened environmentally*

sensitive areas. Responding to these and other issues will be the challenge of the future." (City of Kent, 2001)
The population of Kent has grown significantly in the past few decades, and this growth is expected to continue for the next 20 years, although not at such a fast rate. Between 1970 and 1990, Kent's population grew by over 125%, and then between 1990 and 2000 it grew again by another 109%. (source: ***Kent Community Profile, ch. 2 of the Comprehensive Plan update***, p. 2)

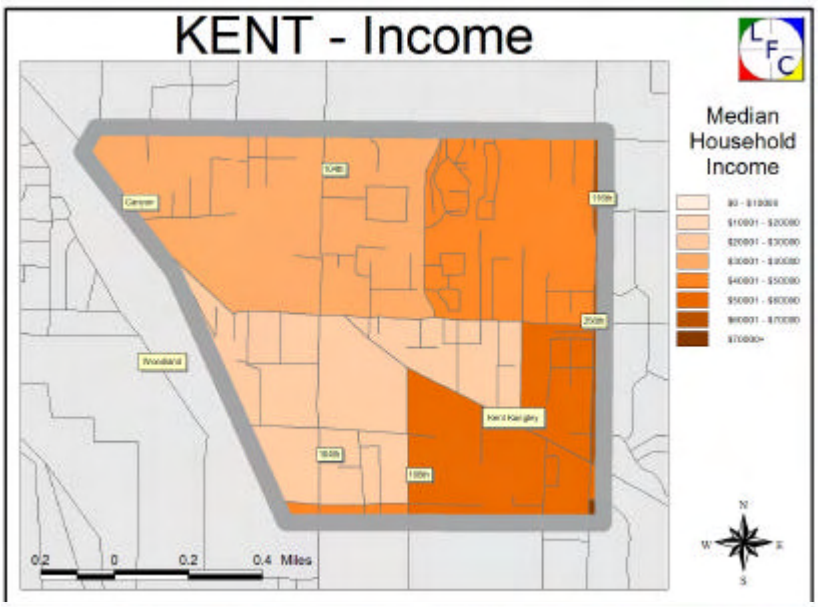
Kent East Hill began to develop in the 1960s, with commercial development along Kent-Kangley Road. Kent East Hill can be characterized as a 'suburban cluster,' (Moudon and Hess 2000) that is, a center which contains retail and commercial land uses surrounded by bunches of multi-family and single family housing. These suburban clusters have a good mix of land uses and relatively high densities, which theoretically should support a walkable neighborhood. However, the design of both the public realm and of individual multifamily housing projects (which tend to act as self contained islands of parking court townhouses) makes pedestrian activity difficult.

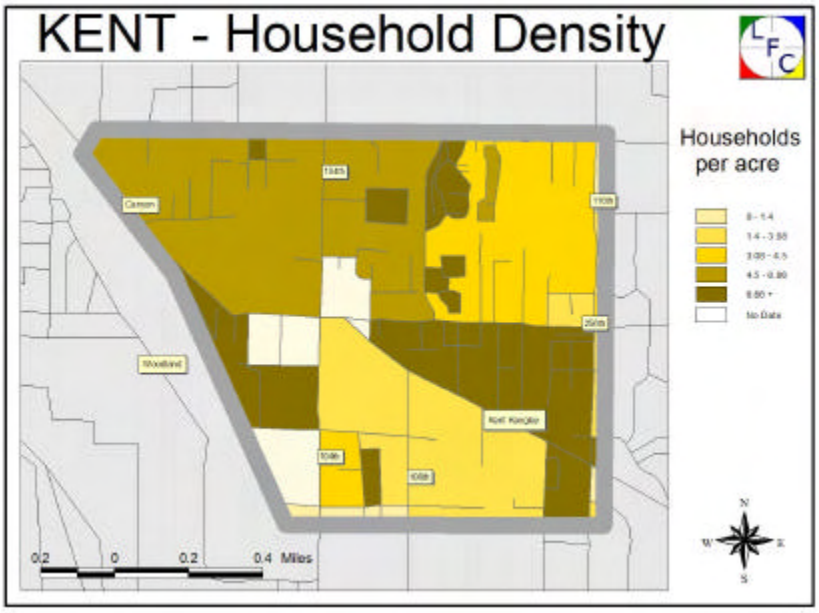
The City of Kent and the neighborhood of Kent East Hill do have a lot of positive attributes. It remains one of the county's affordable places to live, it has a good system of parks (although very little can be found within the boundaries of Kent East Hill), and it has an increasingly diverse population that contributes to the development of a more multicultural millieu. Like other urban centers within King County, Kent will continue to grow, mature, and evolve. Current development includes a commuter rail station adjacent to downtown Kent, streetscaping (new sidewalks and street lights) for the downtown core, and more new multifamily housing.

The City of Kent has just published an update of their comprehensive plan (the planning process took place 2002-2003). Since 1995, Kent's population has increased by 89%, primarily due to annexations. There have also been changes in the Growth Management Act that needed to be incorporated into the Comprehensive Plan. Planning goals articulated in the update to the comprehensive plan include:

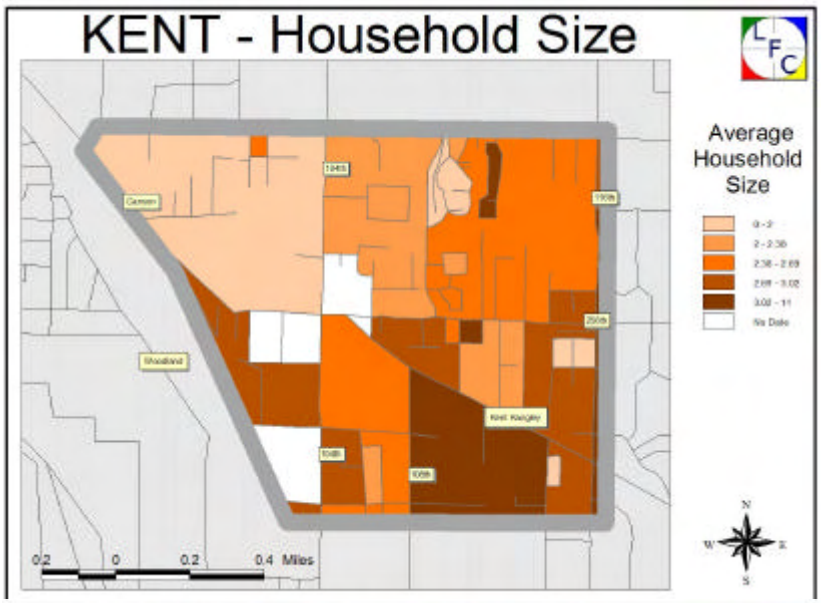
- a " future growth and development pattern that minimizes urban sprawl"
- encouraging mixed use development
- the development of neighborhood plans
- the development of a safe transportation network which promotes a variety of mobility options, including private car, public transit, bicycling and walking.
- The provision of public facilities, especially for medium and high-density development. (p.5-6, Ch. 3, comprehensive plan update)
- The development of an urban design strategy which, "Reflects the desired community vision… and that through this urban design strategy the City shall ensure that the Comprehensive Plan reflect the desired visions of the citizens of Kent".

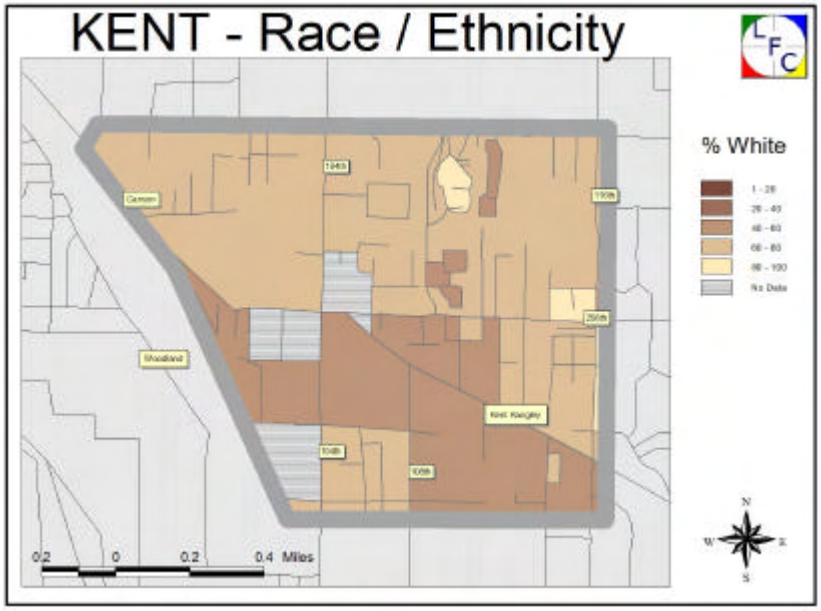
It would seem to be an opportune time for Kent to capitalize on the demand for housing and future growth through a set of strategies to facilitate the achievement of its adopted goals and policies. The City of Kent has several initiatives underway to improve the quality of the urban environment in the East Hill area. Proactive efforts to coordinate growth in the East Hill area, that build on the current commercial base and transit ridership potential, could result in a much changed and more wakable East Hill environment. The intention of this report is to begin to explore urban design and transportation strategies that are available to the County and to the City of Kent that would meet the kind of goals and aims that the comprehensive plan update seeks to articulate.



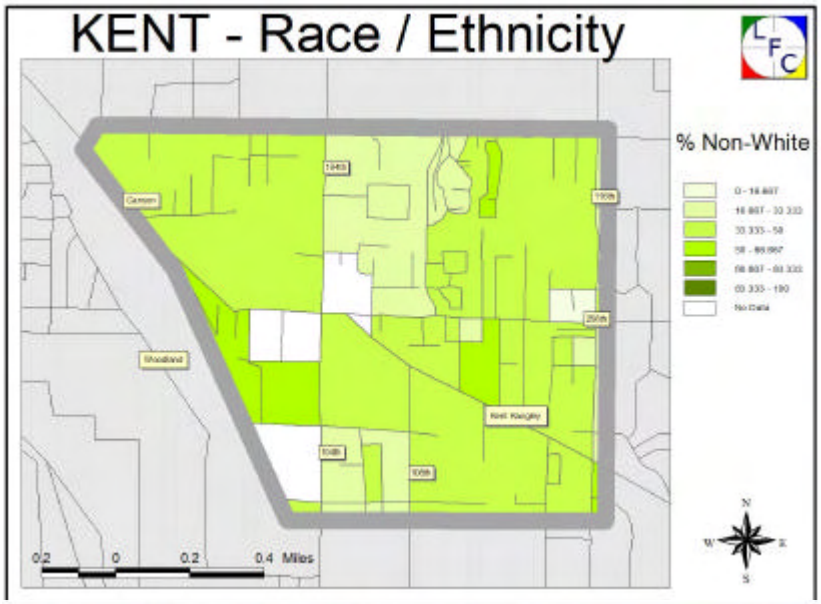


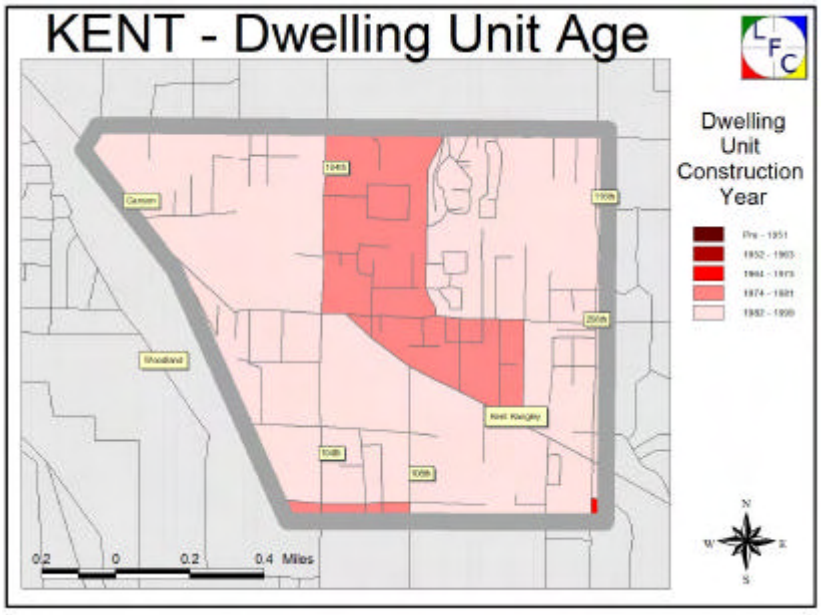
analysis:
Whithin Kent East Hill residents with the highest incomes can be found in the southeast quadrant – this corresponds to the location of primarily single family housing. Incomes are lowest in the southwest portion of the site – this area is dominated by retail establishments and some townhouses and single family houses.
The highest household densities are to be found in numerous locations, as there are numerous locations of multifamily and townhouse developments in Kent.





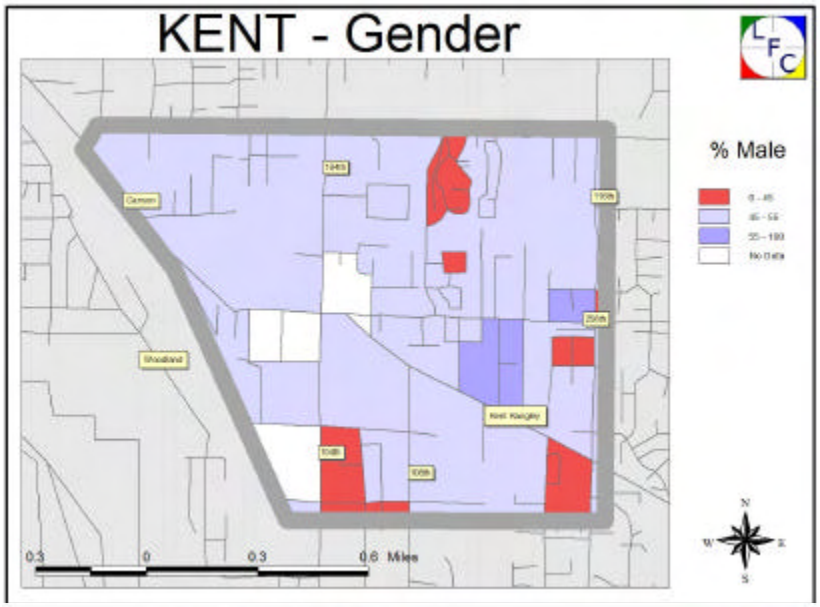
analysis:
The largest household sizes are to be found in the southeast quadrant – this seems to correspond to household income and the presence of a larger proportion of single family houses.
Kent is a surprisingly diverse community. There are some minor concentrations of white people to be found in the northeast quadrant, but overall it would appear that a sizable proportion of Kent's population is non-white.

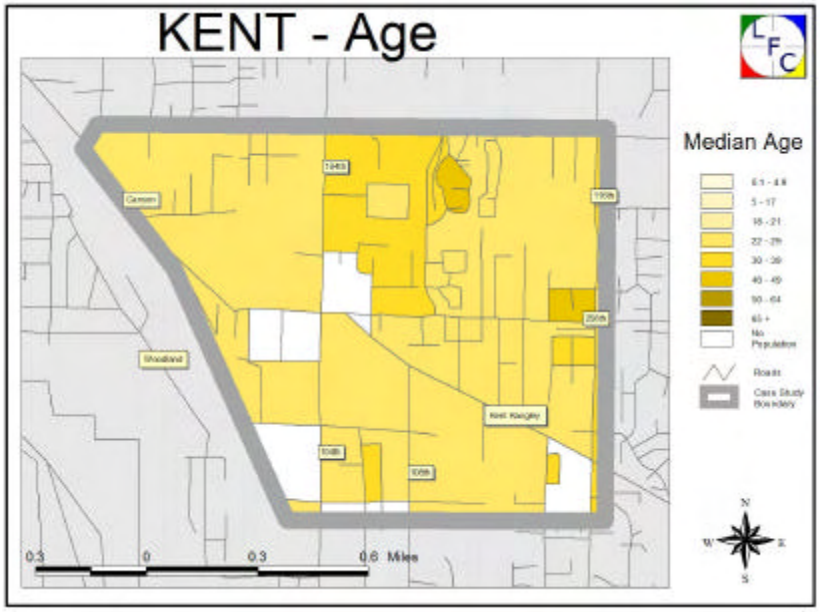




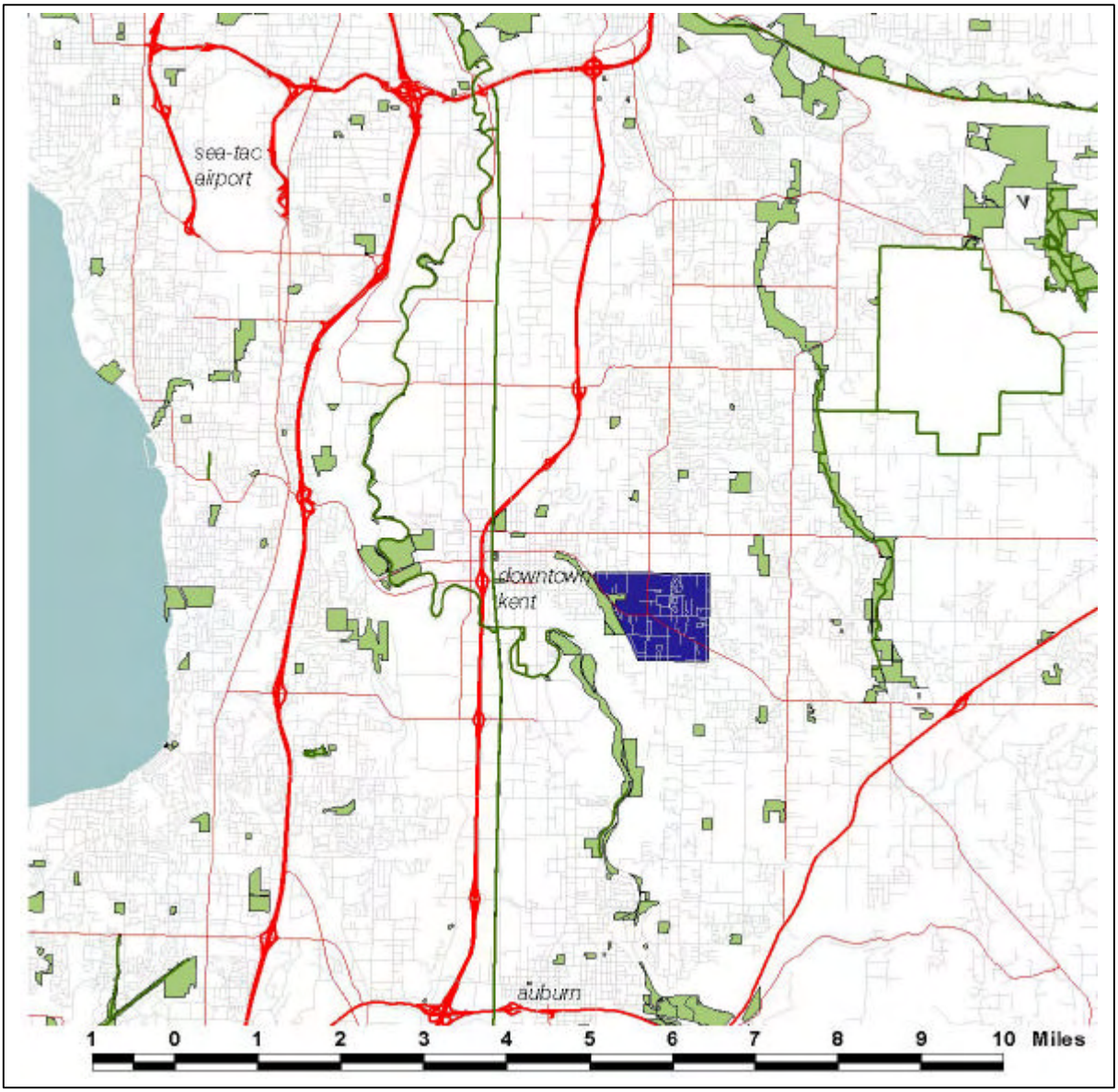
Analysis:
There is generally an even distribution of non-white residents throughout Kent East Hill.

Kent is the youngest of the 3 case study communities. Most residences were constructed after 1982. The earliest development began in the 1960's, and are primarily found east of 104th Ave. SE and along 256th.





analysis:
There is generally an even distribution of genders in Kent, although there are some concentrated pockets of higher proportion of females in some of the multifamily dwellings.
Kent is a fairly young community when compared to White Center and Redmond. The median age of residents is spread pretty evenly throughout the community, although there are a couple of pockets with an older median age. It could be that some of the multifamily developments are primarily older adult oriented as opposed to being family focused.



analysis:

Kent East Hill is located on the eastern ridge of the valley created by the Green River. It is has good access to regional transportation routes, including I-5 and SR 167. It is less than 10 miles from Sea-Tac airport, less than 20 miles from downtown Seattle and less than 15 miles from downtown Tacoma.

map legend:

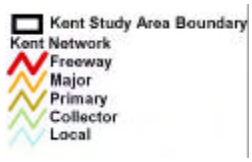
- Trails
- King County Parks
- Transportation Network
- F
- M
- P
- C
- L
- Kent
- Water

Kent – Regional Transportation

analysis:

Kent East Hill is defined by the intersection of the arterials of 256th and 104th. The local street network within the quadrants of the arterials tend to be ad hoc additions. The pattern of streets reflects both the era and the process of development: local streets have been added with each successive ad hoc development, and serve only their particular suburb. There is no coordination to link up local streets, or to connect multifamily projects or subdivisions together.

map legend:



Kent – Road Hierarchy

analysis:

Many of the streets within Kent East Hill are private and not publicly maintained or owned streets. Local streets have been added in an ad hoc fashion, as private development occurs. Many of these private developments are islands unto themselves, and do not connect with other streets. The result is a network which is unevenly developed and discontinuous. Interestingly, there are also a handful of rights of way which are designated on maps, but which do not have any street improvements.

map legend:

Unimproved ROW
Kent-private roads
Kent boundary
Kent streets

Kent – Street Network

analysis:

The existing bike routes are located along the major arterials and lack distinct bike lanes or even signage.

map legend:

Kent boundary
Bike Routes-unmarked
Kent streets

Kent – Bike Routes

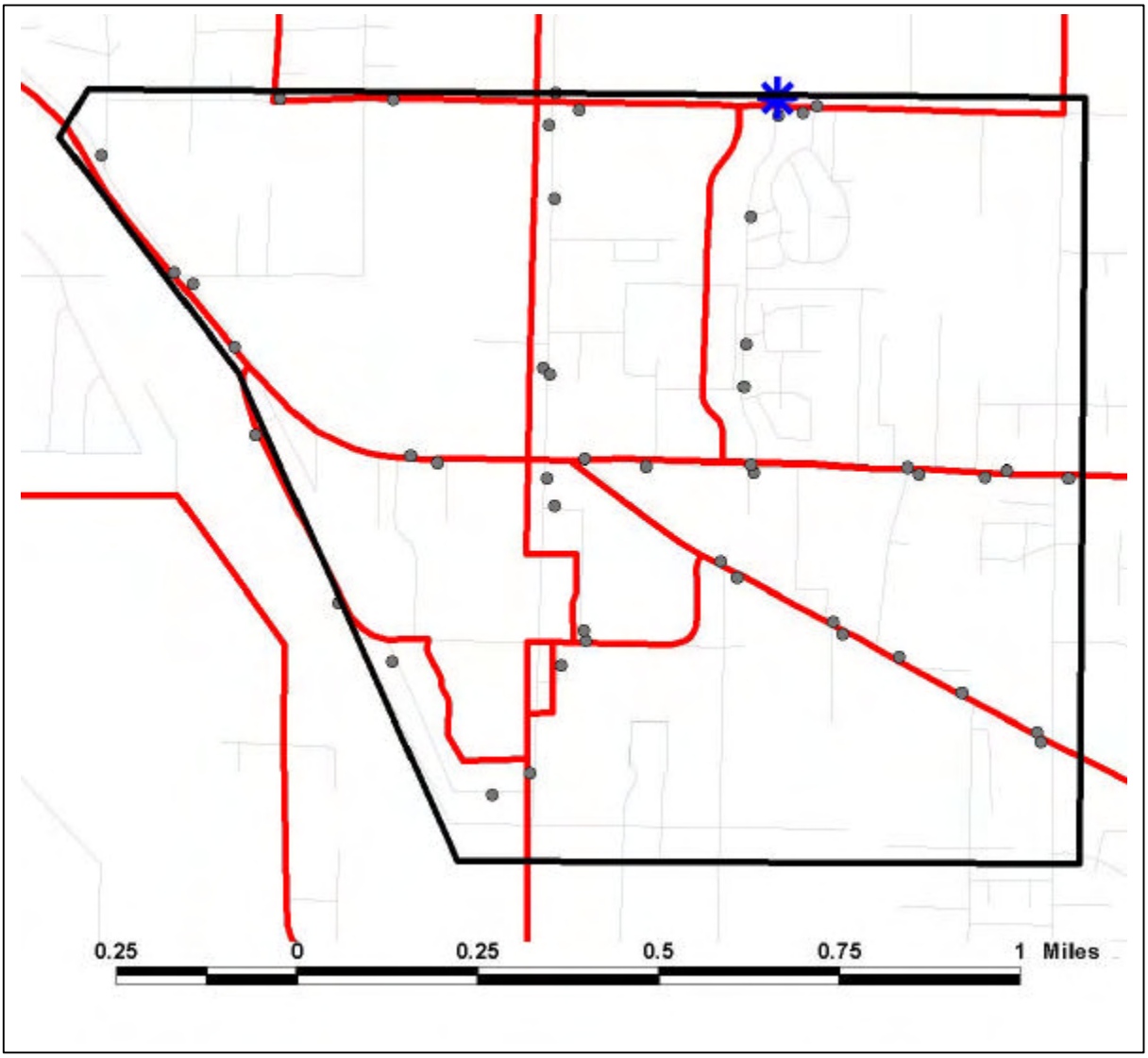
analysis:

The pedestrian network in Kent East Hill is less extensive than the road street network as many streets, both public and private, lack dedicated sidewalks. This sidewalk inventory was done through field observation.

map legend:

Kent boundary
Public Sidewalks
Kent buildings
Kent parcels

Kent – Pedestrian Network



analysis:

The neighborhood of Kent East Hill is serviced by 10 bus routes, only 2 of which operate 7 days a week, (6 of the 10 are weekdays only). One of the daily routes in an east-west route which runs along Kent Kangley Road, then via SE 104th and SE 240th to the Kent Transit Center, the other is a north-south route which connects Kent East Hill to the Renton Transit Center and the Renton Park +Ride. There are a number of weekday commuter connecting Kent East Hill to downtown kent and beyond to downtown Seattle through either Kent-DesMoines P+R , then I-5 or Tukwila, or SODO. In addition there are also buses which go out further east and south to Lake Meridian, Timberlane and Black Diamond.

map legend:

- Kent study area boundary
- Kent park-n-rides
- Kent bus stops
- Kent bus routes
- Kent streets

Kent – Transit Routes

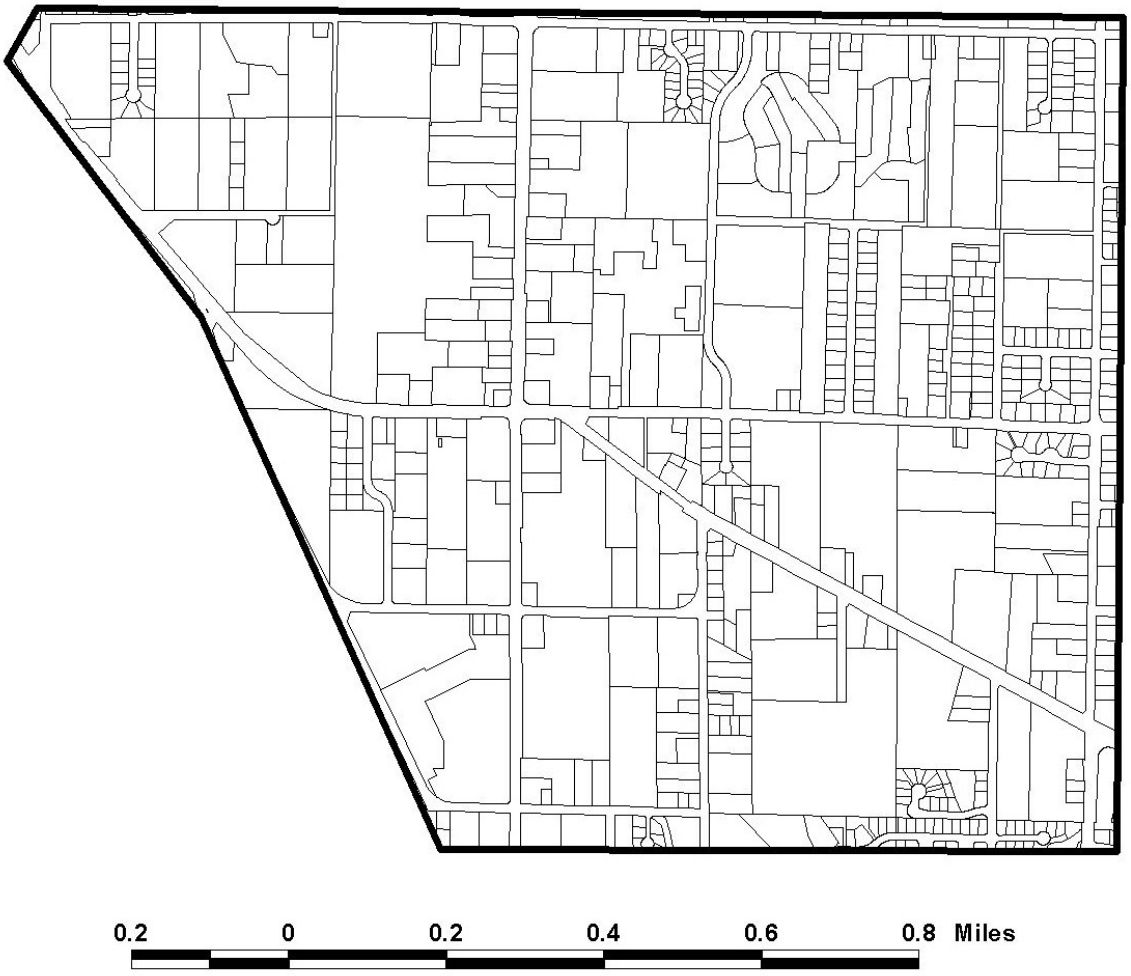
Travel Times from Kent East Hill						Transit - SOV Travel Time	
	SOV			Transit			
Destination	**AM**	**PM**	**OP**	**AM**	**OP**	**AM**	**OP**
Seattle Northgate	46.45	45.15	44.44	111.02	141.24	64.57	96.8
Seattle University District	44.6	42.17	41.77	109.97	136.04	65.37	94.27
Seattle Center	39.83	37.32	37.33	88.92	118.44	49.09	81.11
First Hill/Capitol Hill	37.82	35.55	35.62	93.09	122.17	55.27	86.55
Seattle CBD	36.67	34.01	33.97	69.87	101.13	33.2	67.16
Bellevue CBD	40.44	38.94	39.36	109.82	135.71	69.38	96.35
Renton	21.46	20.57	20.43	87.22	100.78	65.76	80.35
Tukwila	19.04	18.05	18.1	70.29	73.83	51.25	55.73
Sea Tac	19.31	18.17	18.14	90.64	98.46	71.33	80.32
Kent	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Federal Way	21.09	24.13	21.9	96.67	111.08	75.58	89.18
Redmond	47.27	47.53	46.69	133.53	159.42	86.26	112.73

Based on Kent East Hill as Taz 380

analysis:

From this analysis it would appear that taking transit to a destination takes 2-3 times longer than taking a single occupancy vehicle. Some destinations, such as Federal Way or Sea-Tac, although close in distance (20 minutes by SOV), are difficult to get to by transit due to the lack of direct routes.

map legend:



analysis:

The average parcel size in Kent East Hill is relatively large, reflecting the fact that it is a post WW II development of what was previously an agricultural area. Single family lots are easy to identify, and it appears that most single family subdivisions within Kent East Hill are small, discrete subdivisions. A fair number of parcels in this area lack any access to a public right of way.

map legend:

Kent boundary
Kent parcels

Kent East Hill – Parcels

analysis:

This map is based on public streets only; private streets have been left out. Kent East Hill is composed of very large blocks; smaller blocks are 600' long, while the longest blocks (104th, north of 256th) are as large as 2500' feet long. Block size is an indicator of walkability – smaller blocks indicate a more walkable area. By this standard, Kent East Hill would not appear to be a very walkable neighborhood.

map legend:

Kent Boundary
Kent Blocks
Kent Streets

Kent East Hill – Blocks

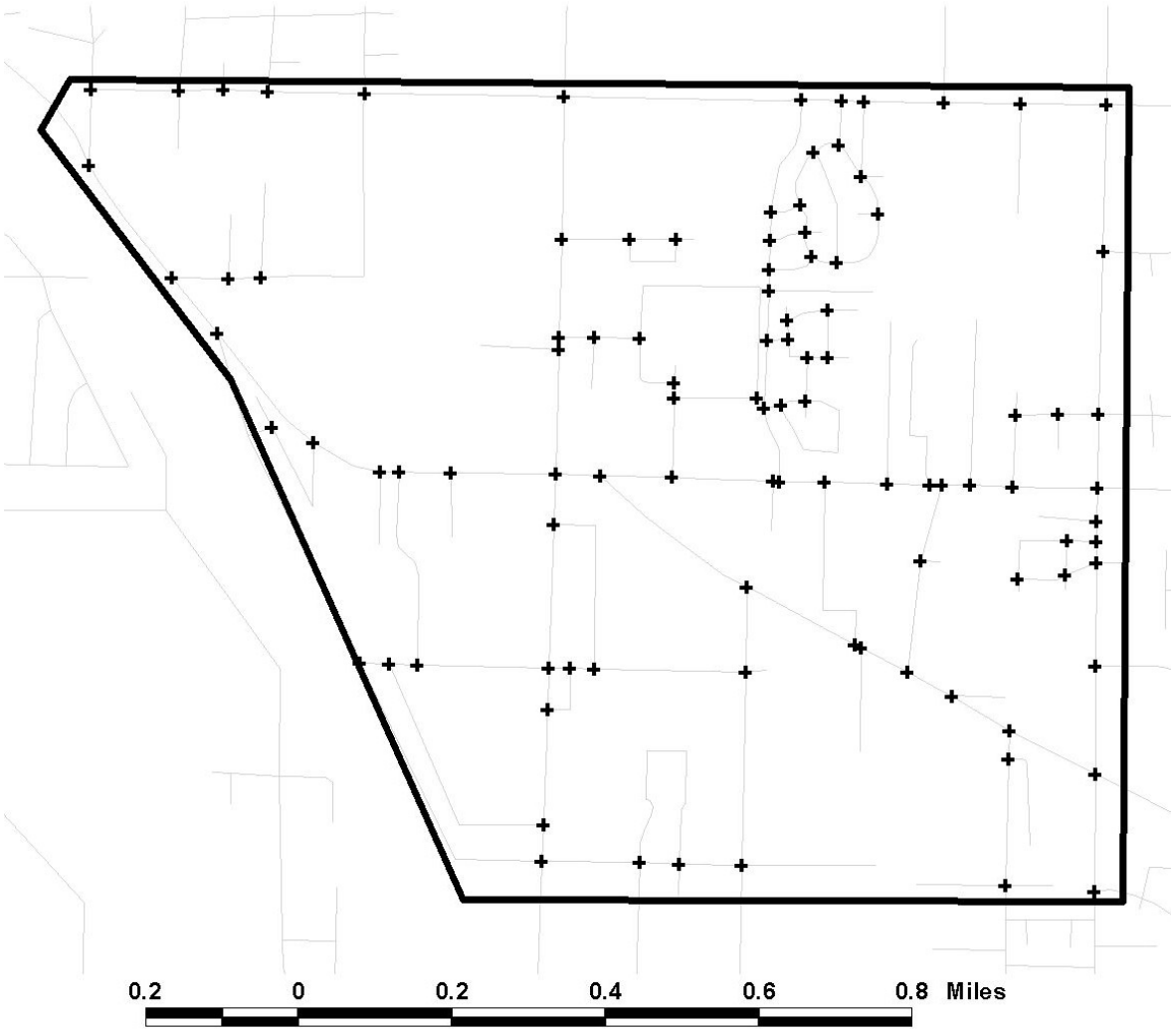
analysis:

The figure ground pattern of building outlines reveals the numerous multifamily housing projects that surround the commercial core of Kent East Hill. It also reveals the significant difference in scale between the giant boxes of the commercial/retail buildings and the smaller, more intimate multi-and single family developments. The density of buildings is somewhat incongruous with the large block sizes. This map also reveals that there are some areas in Kent East Hill that do not include many structures at all.

map legend:

- Kent boundary
- Kent buildings
- Kent parcels

Kent East Hill – Figure/Ground



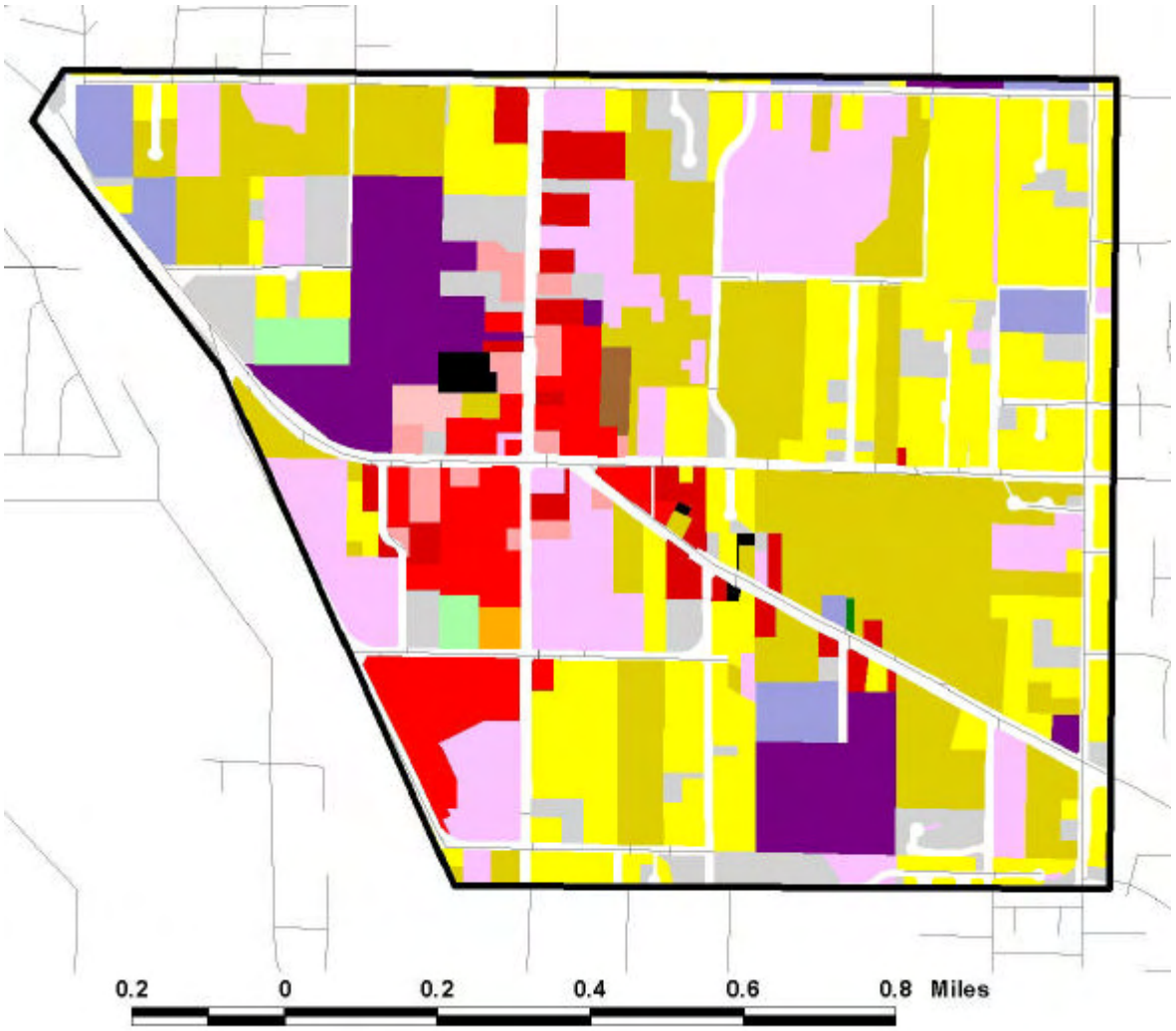
analysis:

This map shows the relatively low intersection density of Kent East Hill. However, there are clusters of intersections within the private multifamily developments. Without these clusters the map would be much sparser. One can notice that many of the public rights of way run in a large grid pattern, reminiscent of agrarian sized blocks and the dimensions related to the land ordinance survey.

map legend:

Kent boundary
Kent intersections
Kent streets

Kent East Hill – Intersection Density



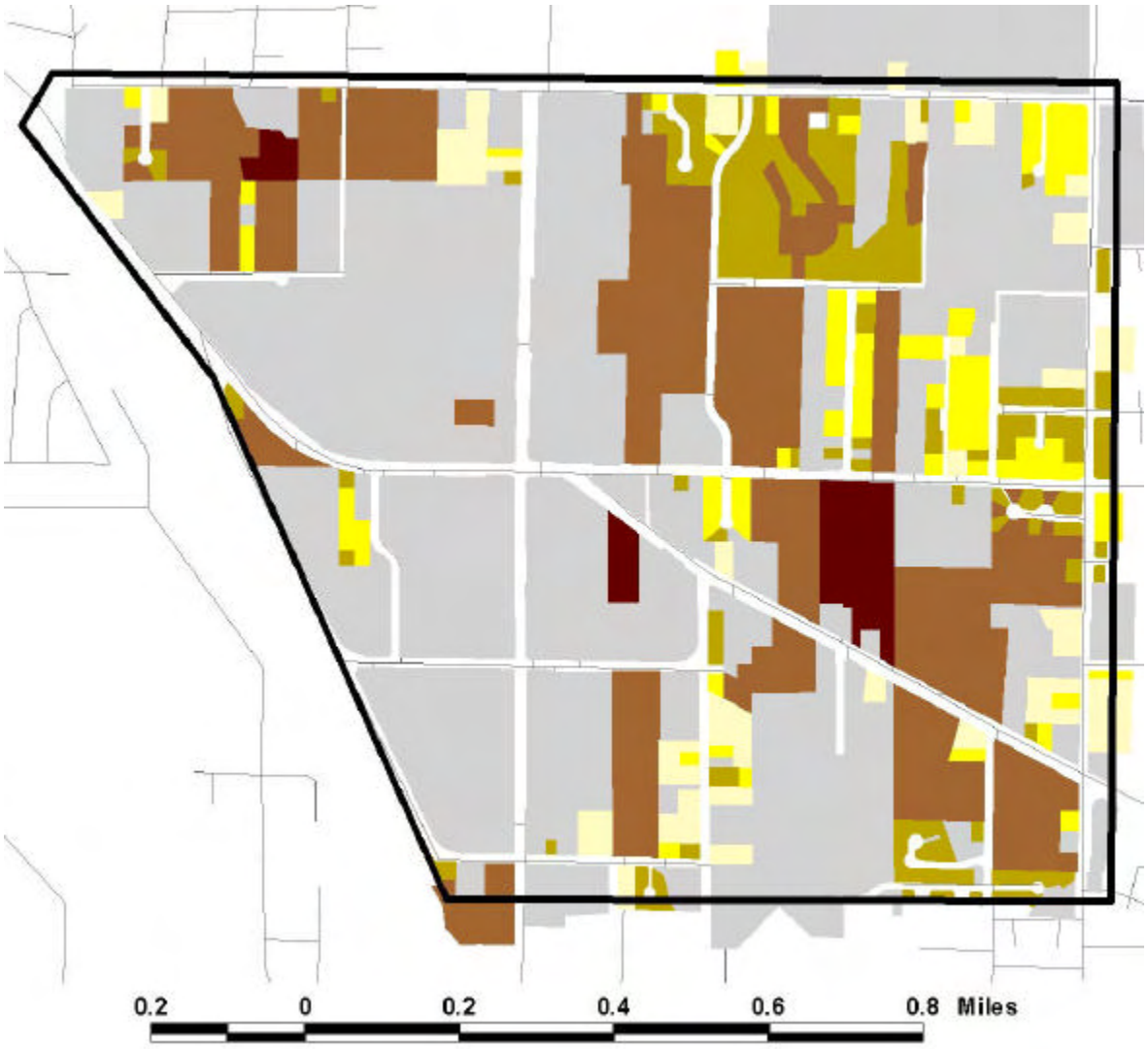
analysis:

This map reveals the distribution of land use in Kent East Hill. Retail and commercial uses are concentrated around the intersection of 104th and 256th. It also shows that the amount of land dedicated to multifamily is as large as the area dedicated to single family. Educations facilities – two high schools – are a significant land use within this neighborhood. There is very little manufacturing and industrial space, making Kent East Hill a classic bedroom community – one that includes housing and retail catering to local residents, but few, if any, sites of significant employment.

map legend:

- Kent Boundary
- Kent Land Use
- Single Family Residential
- Multi-Family Residential
- Civic
- Educational
- Office
- Retail
- Entertainment
- Food Establishment
- Industrial
- Manufacturing
- Open Space
- Parking
- Other
- Recreational
- Vacant
- Kent streets

Kent East Hill – Land Use



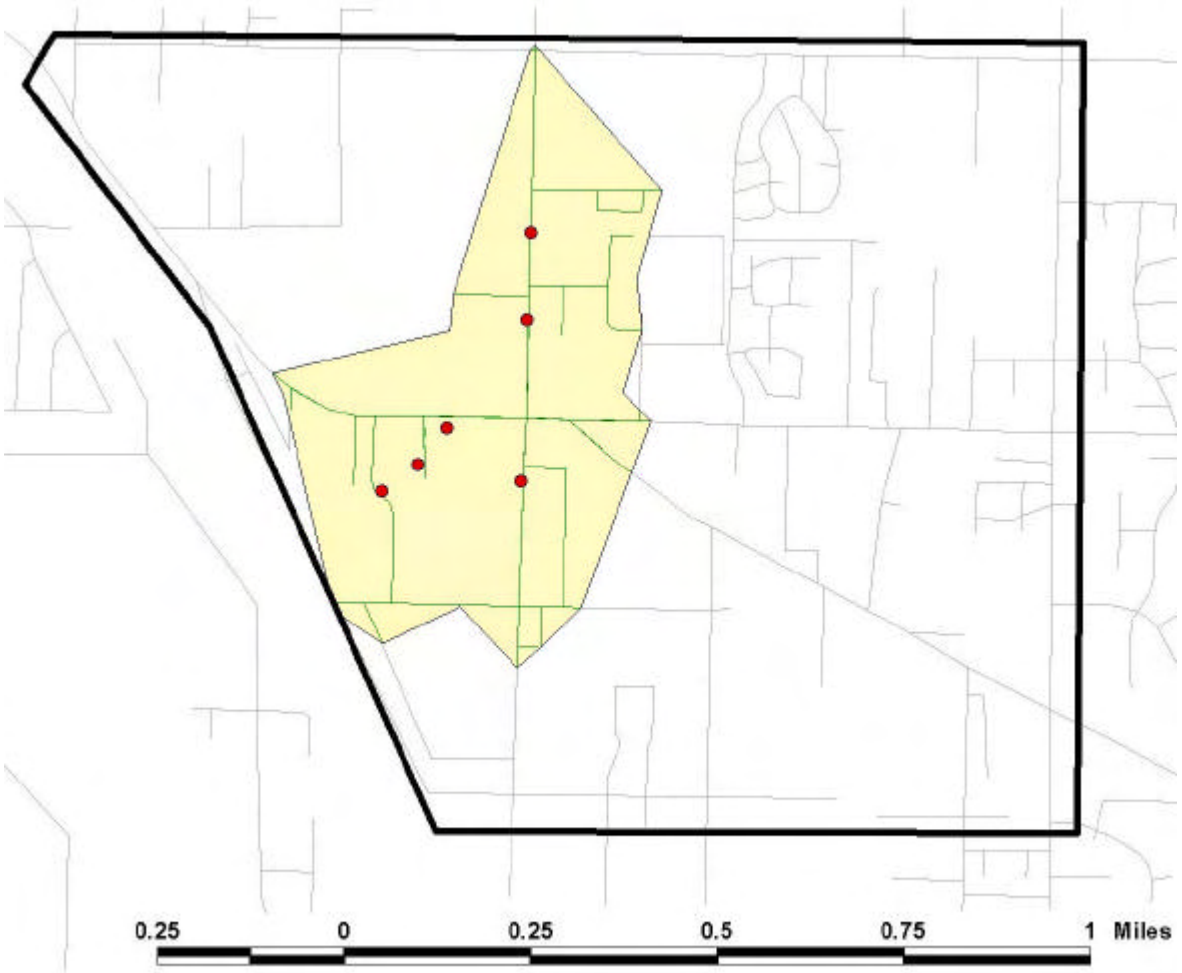
analysis:

Kent East Hill has some clusters of high density multi-family housing. These developments most often take the form of townhouse complexes with shared amenities, such as parking courts, gardens and pools. There are large parcels of land with no residential density, which includes the large retail malls, the high schools, and vacant land. There is no density at the core of Kent East Hill, but there is a ring of medium density housing, surrounded by another ring of low density – primarily single family – housing. This is the typical residential pattern of a suburban cluster.

map legend:

- Kent boundary
- Kent Residential Density
  - <1 DU/Ac
  - 1 - 2 DU/Ac
  - 2 - 4 DU/Ac
  - 4 - 10 DU/Ac
  - 10 - 25 DU/Ac
  - + 25 DU/Ac

Kent East Hill – Residential Density



analysis:

This map demonstrates that only a small proportion of the area of Kent East Hill falls within an easy walking distance (.25mi one way) of the restaurants located in the neighborhood. When compared to the residential density map, it becomes clear that despite the proximity of medium density housing to the retail core, it is still out of comfortable walking distance range.

map legend:

- Kent boundary
- Kent restaurants
- Network .25 mi
- Kent .25mi buffer
- Kent streets

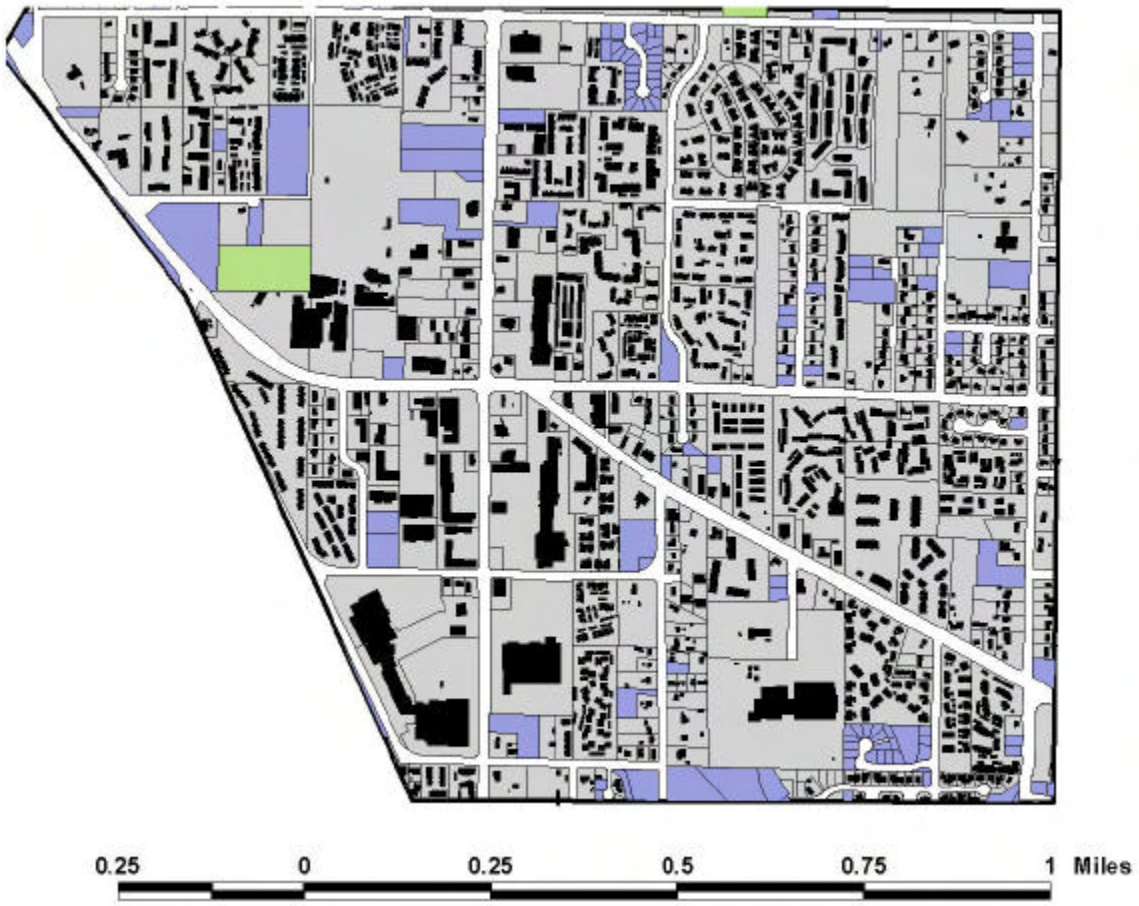
Kent East Hill – .25 mi Restaurant network buffer

analysis:

While there are very few park or recreation facilities within Kent East Hilll, there are some park and recreation facilities just outside of its boundary area. Public spaces within Kent East Hill are dominated by the presence of two high schools and their adjacent recreational facilities.

Unimproved row.shp
Kent park-n-rides
Trails
Kent
Kent buildings.shp
Kent public spaces
Civic
Educational
Open Space
Recreational
Public sw.shp
Kent parks
Kent vacant parcels.shp
Redmond_streets.shp
King County Parks
Transportation Network
F
M
P
C

Kent East Hill – Public Spaces



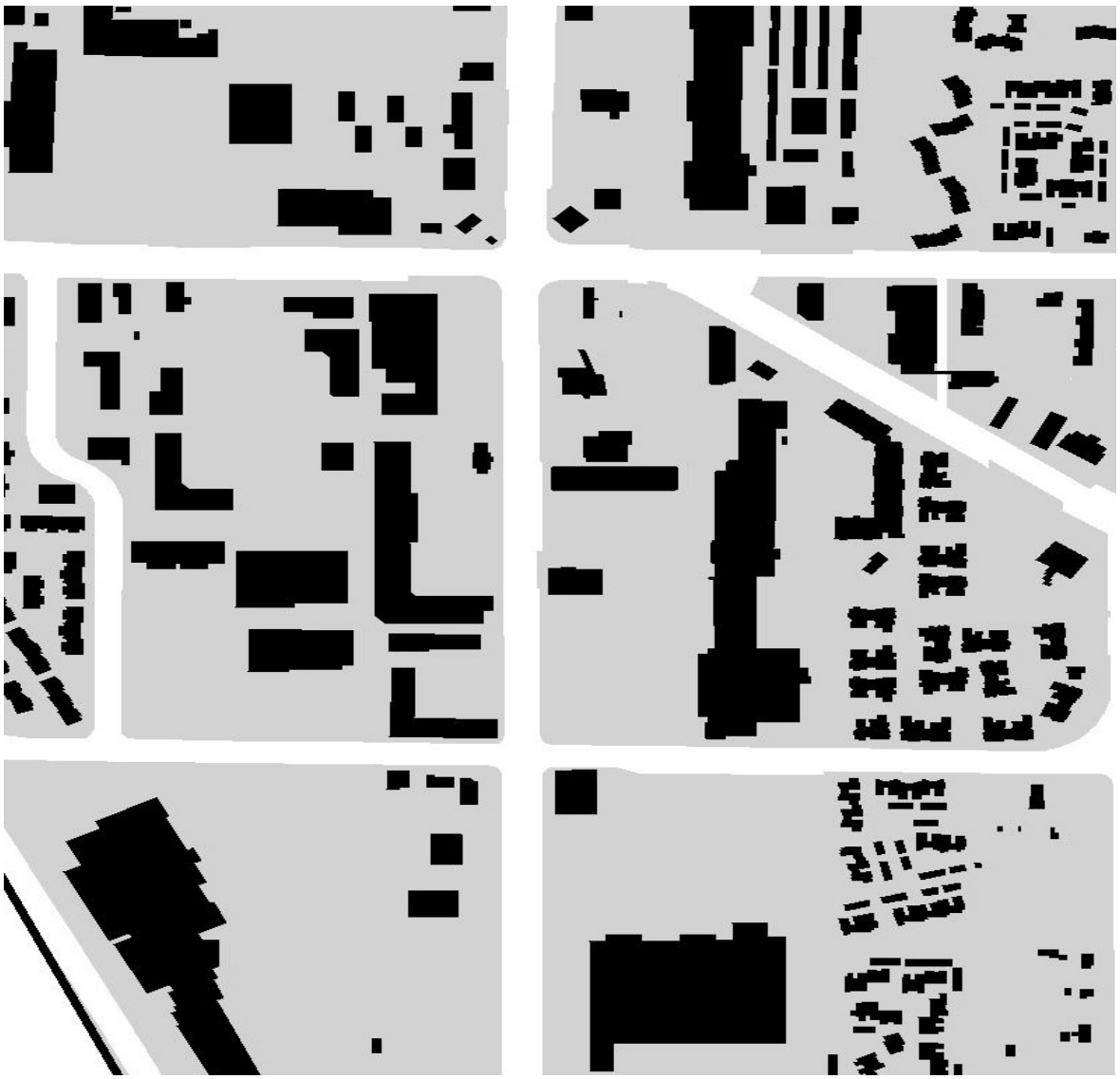
analysis:

This map reveals that most of Kent East Hill is built-out, with some vacant parcels scattered throughout the area. Most of the vacant parcels would appear to be in single family areas, although there are some commercial sites at the north end of 104th.

map legend:

- Kent Parks
- Kent vacant parcels
- Kent buildings
- Kent boundary
- Kent parcels

Kent East Hill – Empty/vacant Parcels



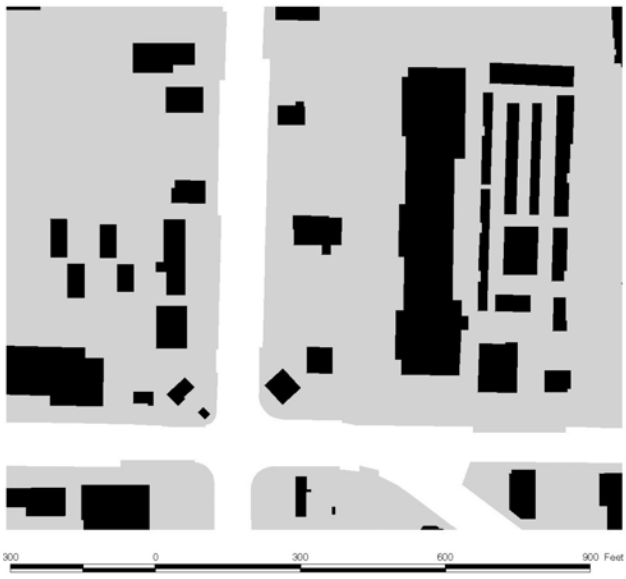
analysis:

This drawing reveals the scale of the retail buildings in the commercial core. Most of the buildings are surrounded by large parking lots, creating a lot of 'lost space' and not providing any definition to the street.

map legend:

Kent boundary
Kent buildings
Kent parcels

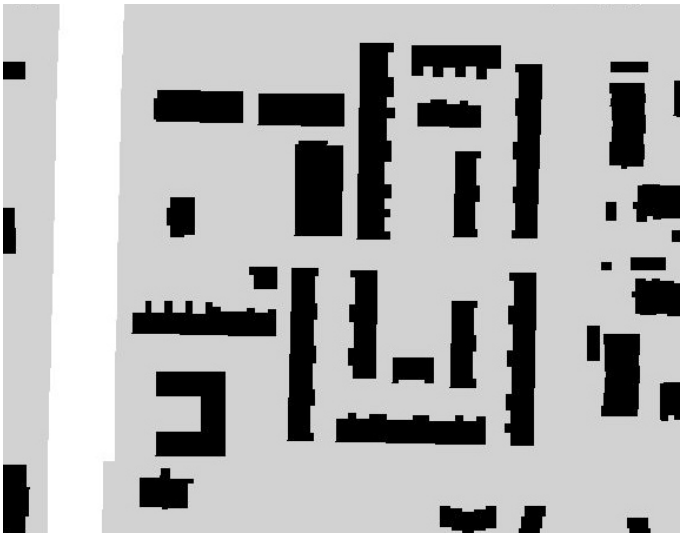
Kent East Hill – Figure/Ground - commercial core



analysis:
The majority of retail development in Kent East Hill is of a scale and form that is dictated by and designed for the automobile. Larger buildings, linearly organized, large parking lots, big signs, are some of the features of this typology of development. Parking lots are 100-300' deep, meaning that the distance from the street and the sidewalk to the door is nearly a city-sized block long.

map legend:

Kent East Hill – Typical Retail development



analysis:

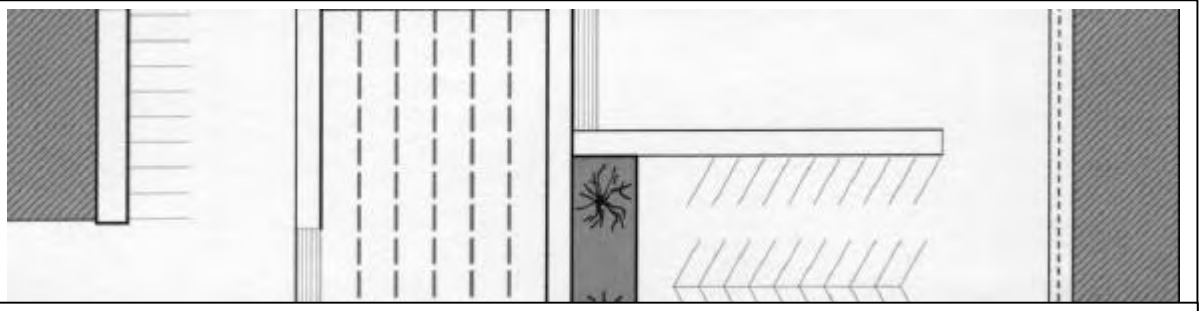
The typical form of multifamily housing in Kent East Hill includes townhouse or apartment units accessed through a shared parking court. Parking and vehicle access tends to dominate the shared space of these developments, although many developments also include shared facilities such as swimming pools, ponds and gardens.

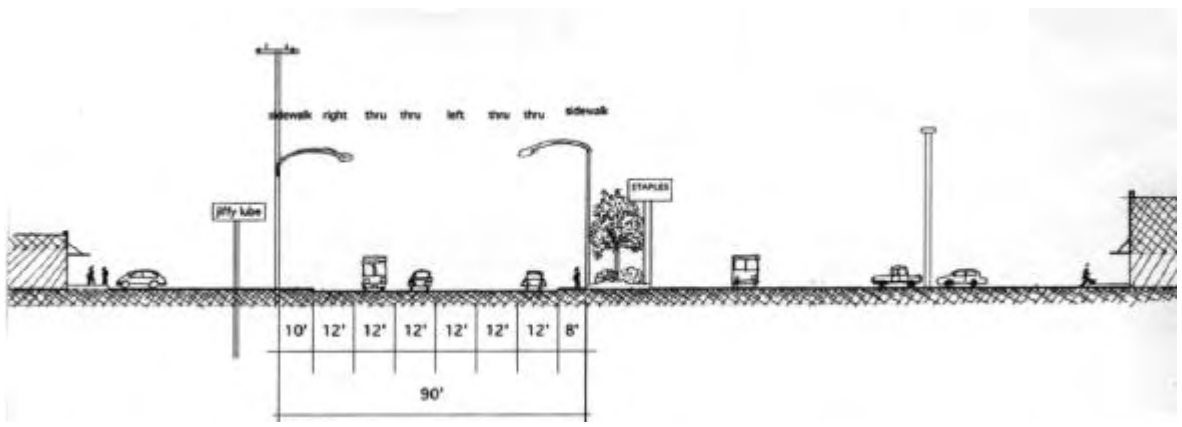
Kent East Hill – Typical Multi-family development

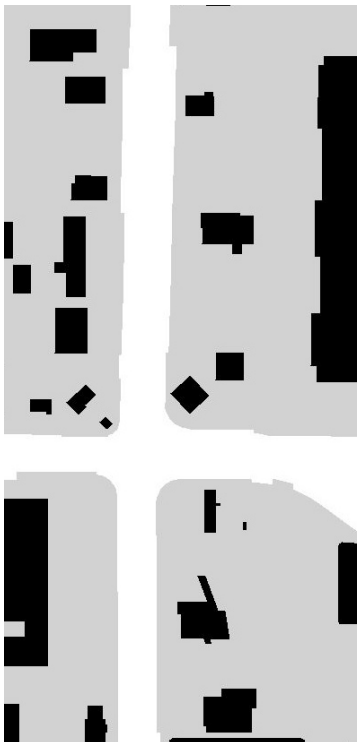
analysis:

There are a number of small subdivisions of single family homes within the neighborhood and case study site of Kent East Hill. The subdivision developments tend to be small – 1-3 small streets of 10-16 houses each. Many of these discrete single family homes are on their own dead end street or cul-de-sac. There is a range of house ages and sizes, from duplexes and small ranchers to larger, and newer, 3-4 bedroom houses with 2 car garages.

Kent East Hill – Typical Single-Family Development







analysis:
The arterial streets that compose the commercial core are relatively wide and contain many lanes of traffic. Pedestrian facilities are minimal. Distances from the public sidewalk to the front door of some retail establishments is as large as 300', making this an uncomfortable and inconvenient area for pedestrians.

Kent East Hill – Street Design-commercial

Summary of Existing Conditions

Kent East Hill is a suburban cluster or neighborhood with a population of about 10,000. It has a median household income of $46,985, which is higher than White Center but lower than Redmond. Kent East Hill has a relatively young population, the youngest of the 3 case study sites; median age is 30.7. It is also surprisingly diverse - 42% of its population is classified as 'non-white'. However, of the 3 case study sites, it has the lowest average household size (2.37) and the lowest average family size (2.83). Kent is a relatively new community; its median date of housing unit construction is 1980.

In terms of its transportation facilities, Kent East Hill is located about a mile from SR 167, and is connected to adjacent neighborhoods by major arterials. The urban form of Kent East Hill is defined by the intersection of three major arterials: Kent-Kangley Road, 256th and 104th. Kent East Hill has a small network of public roads, with many private roads taking the place of local streets. Most of the private roads are self-contained systems – that is, they do not create a connected network, instead they are isolated mini-networks, often with only 1 or 2 outlets to a major arterial or collector. There is an incomplete and disconnected network of sidewalks and pedestrian facilities, and while there are designated bicycle routes along the major arterials, there are no bike lanes or signage for these facilities. Most of Kent East Hill's roads and streets have been constructed in the past 20-30 years using contemporary street design standards which are designed for the efficient movement of automobiles; pedestrian and bicycle facilities are minimal at best. Streets and travel lanes are wide so that cars can move at high speeds, there is very little on-street parking or landscaped buffers that would provide some barrier between cars and pedestrians.

Kent East Hill possesses an urban form typical of many suburban clusters that have developed in the region beginning in the 1960's and 1970's. This form consists of a core of local retail – usually in the form of 2 or more suburban strip malls - centered around a pair of intersecting arterials. In a typical suburban cluster this retail hub is then surrounded by multifamily housing developments – each with its own driveway or system of driveways, fencing itself off from surrounding properties. This ring of multifamily development is then often surrounded by single family subdivisions. These types of urban patterns are characterized by large blocks, few public roads, an abundance of private roads or driveways and as a result, low connectivity and low walkability. These features are all evident in the urban design conditions of Kent East Hill.

Kent East Hill, as does many suburban clusters, has low connectivity, due to the many private cul de sacs, or self-contained 'loop and lollipop' roads. And yet at the same time, Kent East Hill has a high net residential density due to the number of dense multi-family developments and a good diversity of land uses (although, with few manufacturing, industrial or office facilities, it is still essentially a bedroom community). In addition, it

must be pointed out that Kent East Hill lacks significant developed park space within its boundaries. Despite the concentration of commercial uses in its core and the proximity of high density housing, the site design of Kent East Hill as a whole, as well as the site design conditions of the numerous multifamily housing developments makes walking difficult, if not impossible. There are no direct pedestrian routes from the multifamily housing developments to the retail core, and what pedestrian facilities there are, are minimal at best. Very little of its high density housing is currently within a .25 mile network walking distance of the commercial core. However, some of the multi-family housing is sufficiently close in terms of crow fly distance. Direct pedestrian connections from residential to commercial areas could significantly increase the ability to walk to shops and services.

Figure/ground diagrams of Kent reveal a course grain of development; the retail buildings are very large, and surrounded by the empty space of paved parking lots. However, it is important to note that the multifamily developments that surround Kent East Hill's shopping centers do have a fine grain - they are made up of small buildings often laid out on a grid pattern. However, the space in between these buildings tends to be private landscaping or private parking courts.

It is also possible to say that Kent East Hill is rather anonymous – it doesn't have a lot of identity or character and resembles numerous other suburban clusters which all have the same chain stores, fast food outlets and big box retail. (McDonald's, Taco Time, Home Depot, Staples, Jiffy Lube, etc).

Kent does posses some assets, which include:

- Unimproved public right of way which could be used for ped/bike infrastructure.
- Proximity (just outside the study area boundaries) to Mill Creek Park

In summary, the urban form deficiencies found in Kent East Hill include:

- Not a lot of park space within its boundaries – what there is has limited and difficult access
- Low connectivity, especially for bikes and peds
- Low density, with no residential uses in the core – there is no residential in almost half of the total land area of Kent East Hill.
- Retail and restaurants are not located within walking distance of high density housing.

Redmond – Historical development

Redmond is located 11 miles northeast of Seattle and four miles east of Kirkland, at the north end of Lake Sammamish, within the fertile Sammamish River basin and up the sides of the hills surrounding the valley. Prior to the arrival of the areas first white settlers, native Americans lived along Lake Sammamish. The Squak Indians, as the settlers called them, were an offshoot of the Duwamish and Snoqualmie tribes. Archaeolgical digs in Marymoor Park area have revealed evidence of human settlement that goes back as far as 6,000 years ago.

When European settlers first arrived in the area in 1870's they found so many salmon that they first called the place Salmonberg. 12 years later, the town was re-named Redmond after Luke McRedmond, who was postmaster at the time. Incorporated in 1912, Redmond was initially dominated first by logging, and then by agriculture.

During the 1880's loggers who poured into the area built lumber and shingle mills. In 1888 the Seattle Lake Shore and Eastern Railway reached the town. In its logging heydey, the town included a stagecoach office, saloons and hotels, blacksmiths and eateries. Logging faded in the 1920's, after most of the virgin and first growth forests had been harvested. In the following decades agriculture, specifically dairy and chicken farming, became the area's mainstay.

With the completion of the Evergreen Point floating bridge across Lake Washington in 1963 Redmond became directly connected to Seattle. This contributed to significant suburban growth in the 1960's and 1970's. Growth accelerated with the completion of SR 520 and the annexation of the Overlake area to accommodate the high tech industries locating there. With the location of Microsoft Headquarters, and then many other software and digital companies in the early 1980's, Redmond expanded and grew rapidly.

Substantial changes have happened to the built environment of Redmond over the past ten years, including the development of Redmond Town Center south of the historic downtown core (across the railway right of way on what used to be a golf course), a new municipal campus northwest of the old downtown core (on 85th near the Sammamish River), new shopping complexes at the north end of central Redmond. Recently, multifamily housing has begun to infill into the area northwest of the historic downtown – sandwiched in between the municipal campus to the west, downtown Redmond to the south and the new shopping malls to the north, and also north of 90th.

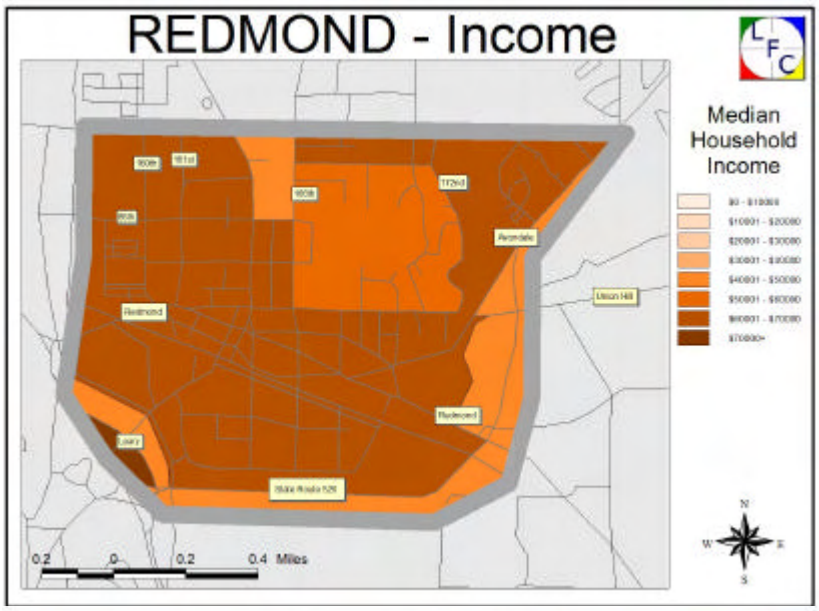
Today, Redmond is best known as the location of Microsoft world headquarters, along with housing other high tech corporations such as Nintendo America and At &T Wireless. Other major corporations with headquarters in Redmond include Eddie Bauer, Safeco, and Costco. It is a major employment center, with more jobs than residents. It is also a very

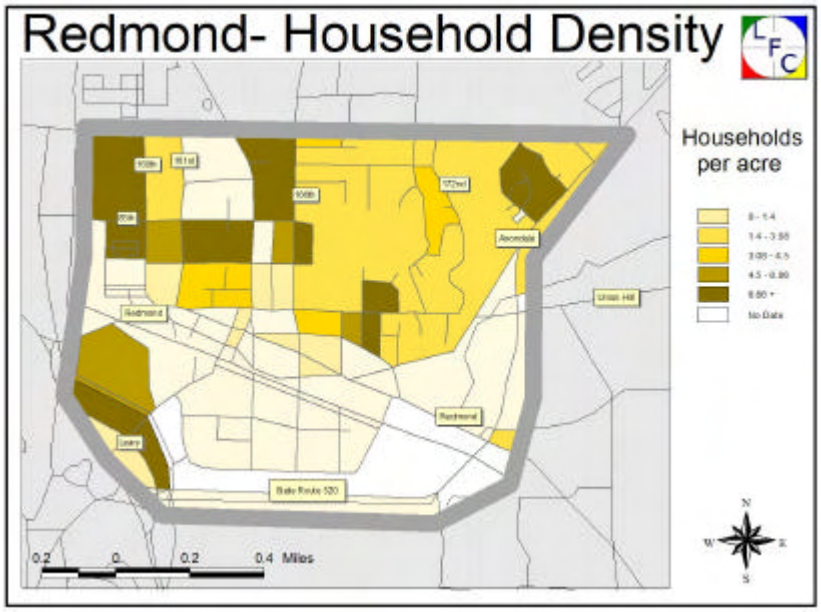
prosperous community, with a much higher median household income than the average for King County. It also has a wealth of recreational and open space facilities in it and nearby. Redmond's park system consists of 34 parks totaling over 1,350 acres and over 25 miles of trails.

Redmond completed amendments to the 2002 Comprehensive Plan which addressed opportunities and impacts associated with population growth. The city recognizes that there is a potential housing shortfall as the amount of available land for new housing declines and prices increase. The plan amendments include policy changes to encourage more housing development - it seeks to "increase the supply and diversity of housing in Redmond not only to provide more opportunities for people to live closer to work, but also to meet better the needs of people of various ages and incomes, from young adults to seniors." It also "emphasizes land use and transportation strategies to reduce traffic impact associated with more growth" (Planning Commission Report, November 20, 2002, City of Redmond).

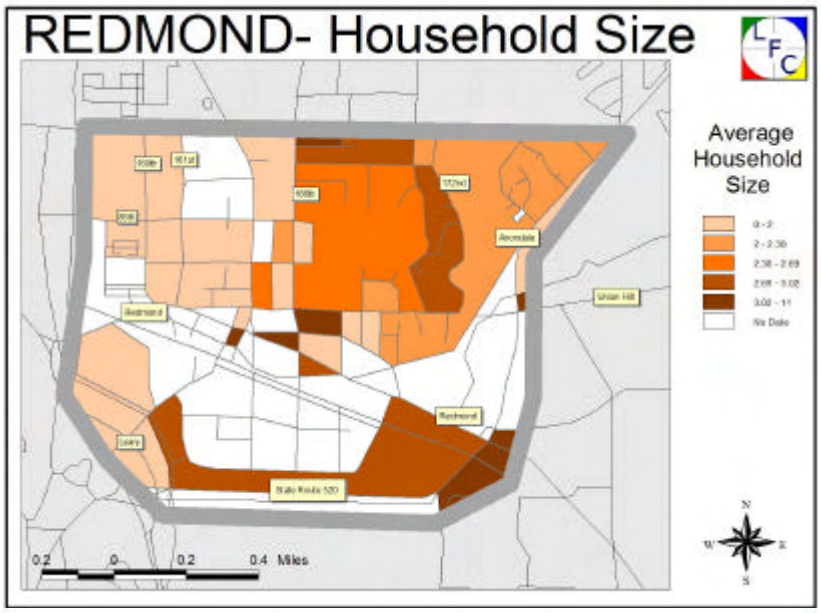
As one of the designated urban centers in the region, Redmond is slated to continue to receive substantial residential and job growth over the next 20 years. Indeed, Redmond is seeing currently both greenfield and infill development, including an array of mixed use projects. Some of the greenfield projects outside of the downtown core advertise themselves as Transit Oriented Developments (TODs). The Lion's Gate housing project started a trend, and now developers are producing mixed use projects in north central Redmond and the community is beginning to market itself as a walkable place to live.

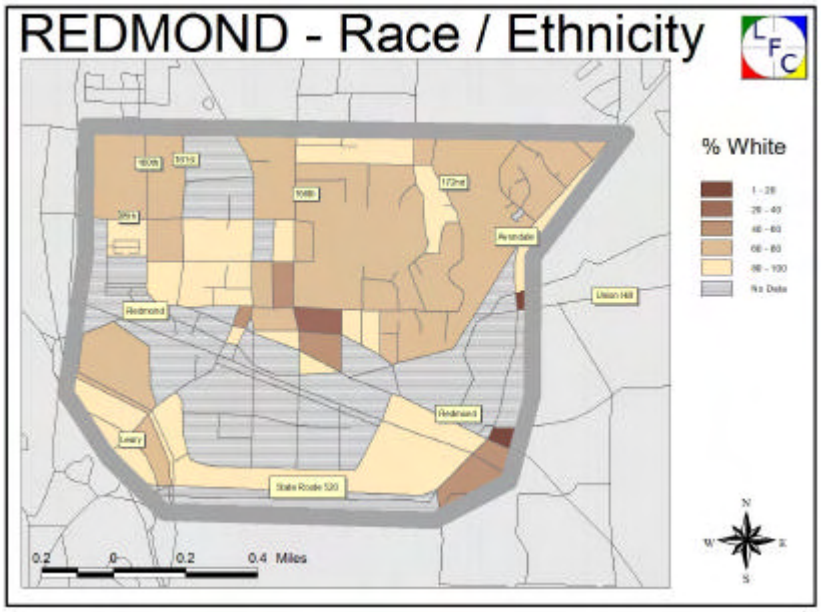
Redmond is a community that has a lot going for it - economic vitality and diversity, abundant recreational facilities, and an emerging urban mileu. The challenge for Redmond will be how to manage this continued growth so that it produces a built environment that is supportive of walking and biking and democratically accessible. Unifying what is currently seen as two downtowns will be an important focus of redevelopment efforts. The next 20 years will be crucial, and the city needs to be both conscientious and considered in how it regulates urban form and more experimental in allowing for new 21st century typologies to emerge. The form that develops now will be with us for years, and this is a chance to correct mistakes, to heal wounds, and to lay the right foundation.



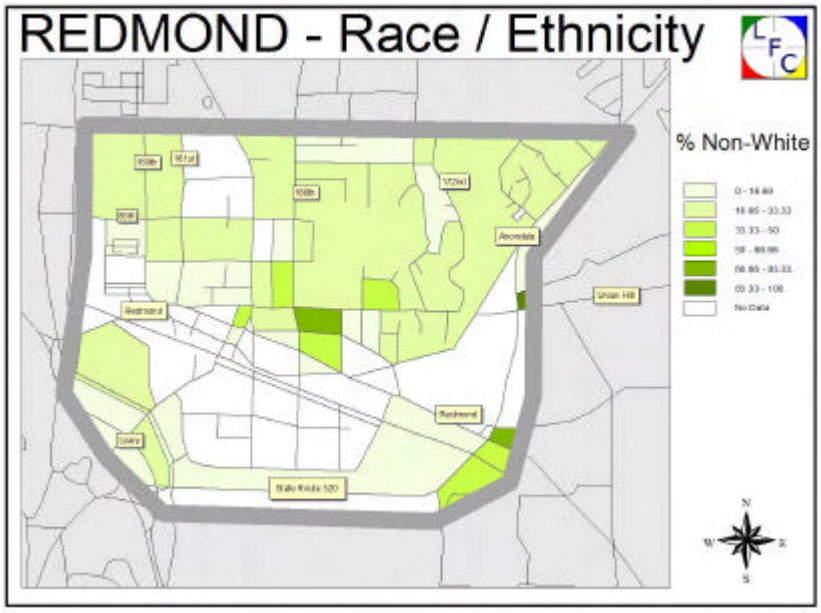


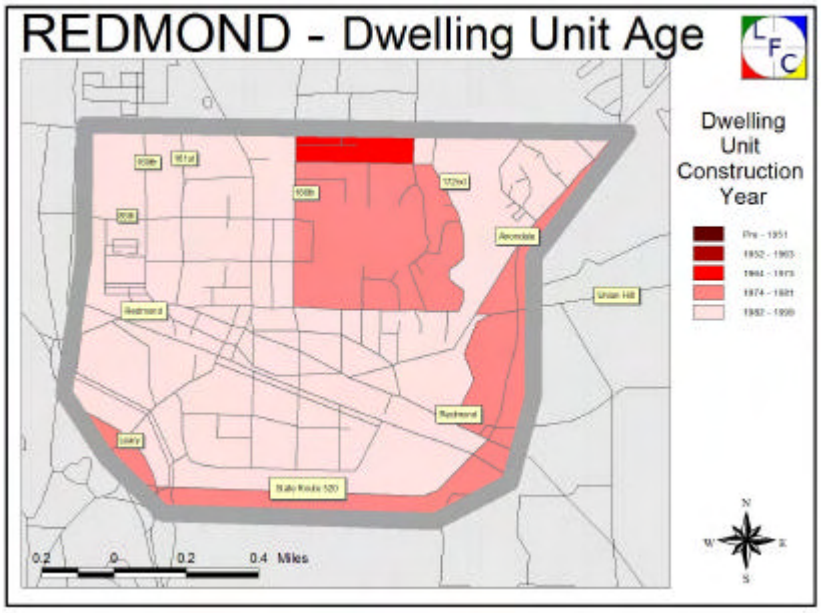
analysis:
Redmond has a high overall median income – higher than the other two case study communities. The lowest median incomes are found within the Redmond Highlands single family area and the multifamily housing at the north end of 168th.
There is a variety of housing densities to be found within Redmond downtown: from zero density to high density. The highest density areas are pockets of newer developments, the lower density areas tend to be primarily, if not exclusively commercial. The single family area reads as medium density in this map.



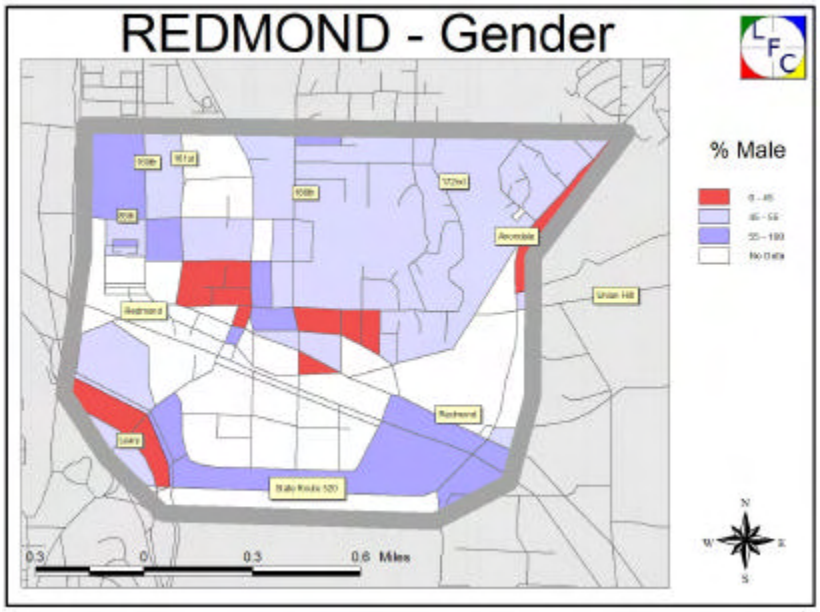


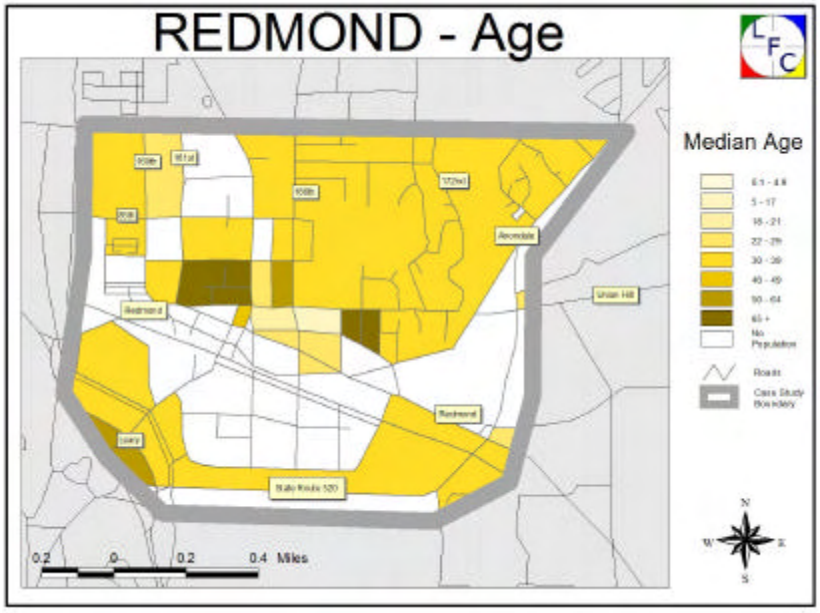
analysis:
Redmond has the smallest average household size of the 3 case study sites. The largest household sizes are generally found in the single family areas. The newer housing that is found in downtown Redmond tends to attract smaller households (singles, couples, empty-nesters).
Redmond is a whiter community than either Kent or White Center. The clusters which include a higher proportion of white residents do not seem to fit any particular category.



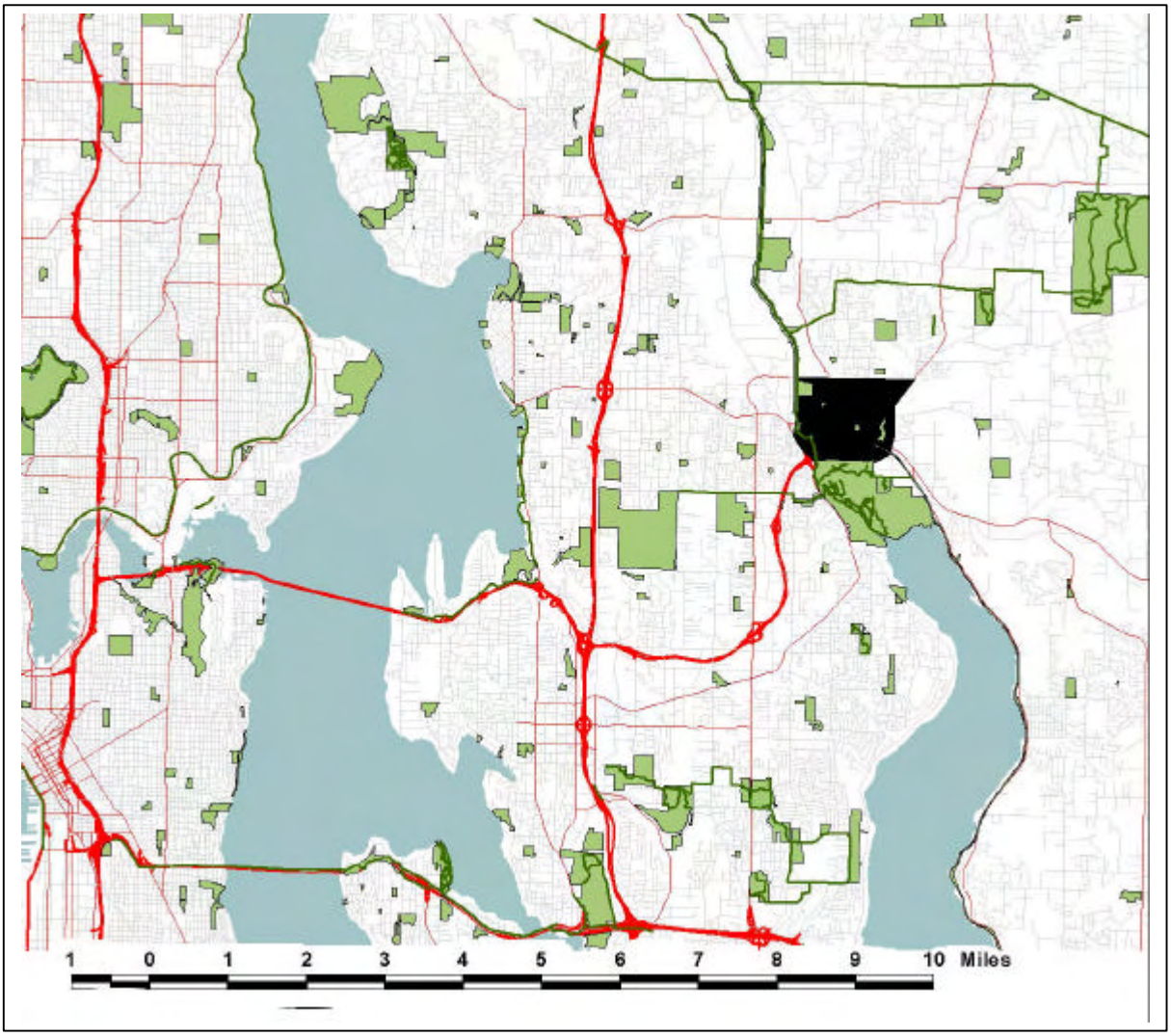


analysis:
Redmond is a relatively white community, but there are some pockets of non-white residents. It is not clear whether this is due to a particular housing form or economic circumstance.
The oldest residences in Redmond are generally found in Redmond Highlands. Curiously, the old original downtown Redmond – which dates back to the late 19th century – does not seem to have a significant number of older dwelling units.





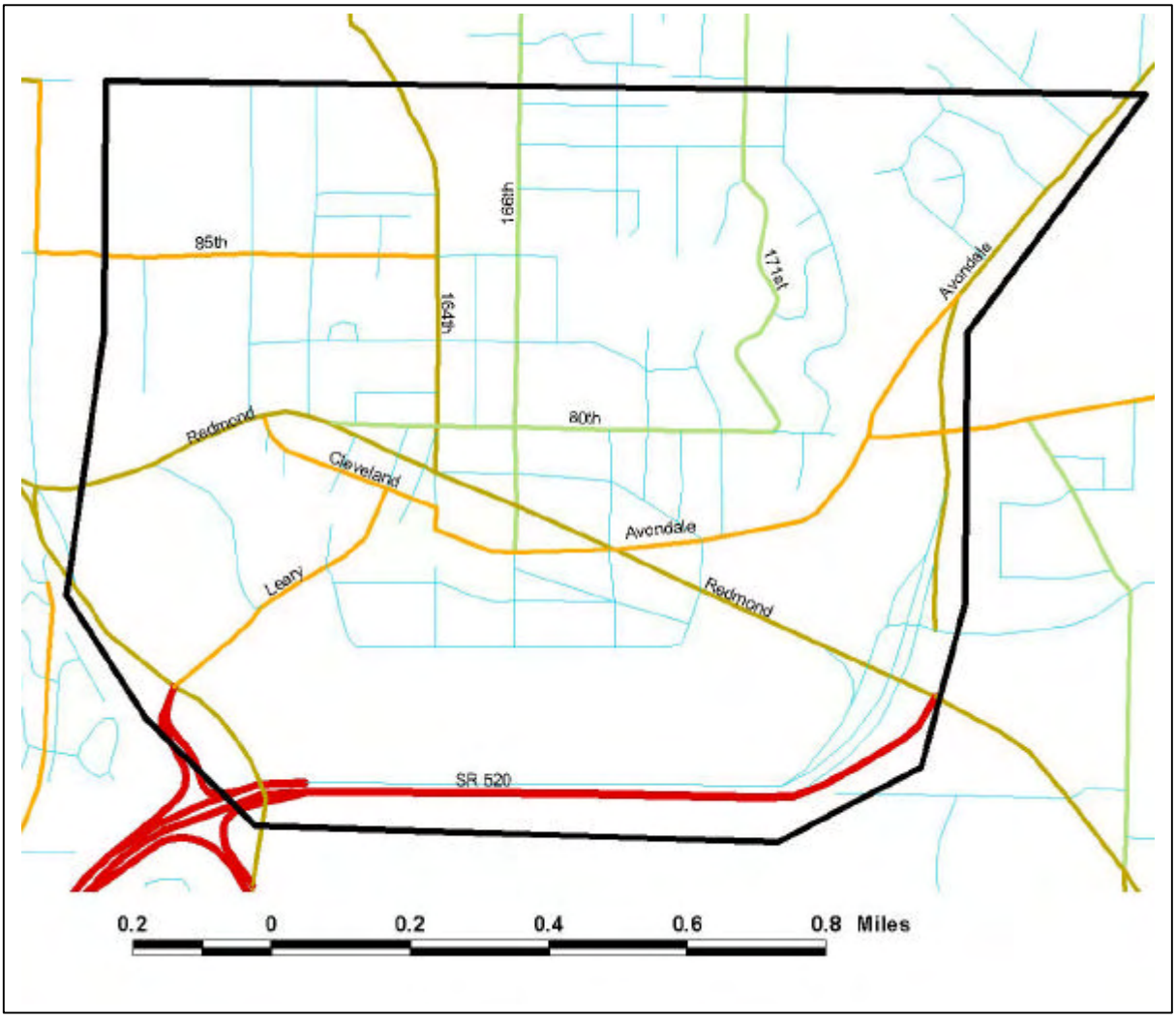
analysis:
Gender is generally evenly spread throughout Redmond. However, there are some pockets with a higher proportion of females. This may be due to the presence of multifamily housing.
In both of these maps there are large areas where there is insufficient data.
Redmond has some clusters where there are higher proportions of older residents; this may be due to the presence of retirement homes and it may also be due to a wave of (empty nester) senior residents who have moved into the new multifamily housing developments.



analysis:

Redmond is located at the north end of Lake Sammamish, along the lowland valley of the Sammamish River. It is at the end of SR 520, and about 11 miles from downtown Seattle. It is close to the Eastside communities of Kirkland and Bellevue.

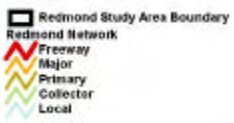
map legend:



analysis:

Downtown Redmond is dominated by the one-way couplet of Redmond Way and Avondale/Cleveland which carry a significant amount of through traffic. Almost all of the traffic into and out of Redmond has to use these limited access points. Other major arterials connect downtown Redmond to Redmond Highlands and areas north, west, and south.

map legend:



Redmond – Road Hierarchy

analysis:

Redmond's street network consists, essentially, of a grid, which has some significant disconnects and gaps. Access to the core of downtown Redmond is limited to a few arterials. It is interesting to note that the block sizes and grid pattern of downtown Redmond are not that different than White Center's, but Redmond's grid is much more discontinuous.

map legend:

Redmond boundary
Redmond streets

analysis:

Redmond has a large network of both marked and unmarked bicycle routes. Most of the new street improvements in the northwest quadrant include marked bicycle lanes. The West Lake Sammamish Trail and the Sammamish River Trail can be found on the study area's western edge. While Redmond clearly has more bicycle facilities than the other study areas, it is still possible to note that there is a need for more connection as there are significant gaps in the network of marked bicycle routes.

map legend:

- Redmond Boundary
- Bike Routes-marked
- Bike routes-unmarked
- Redmond streets

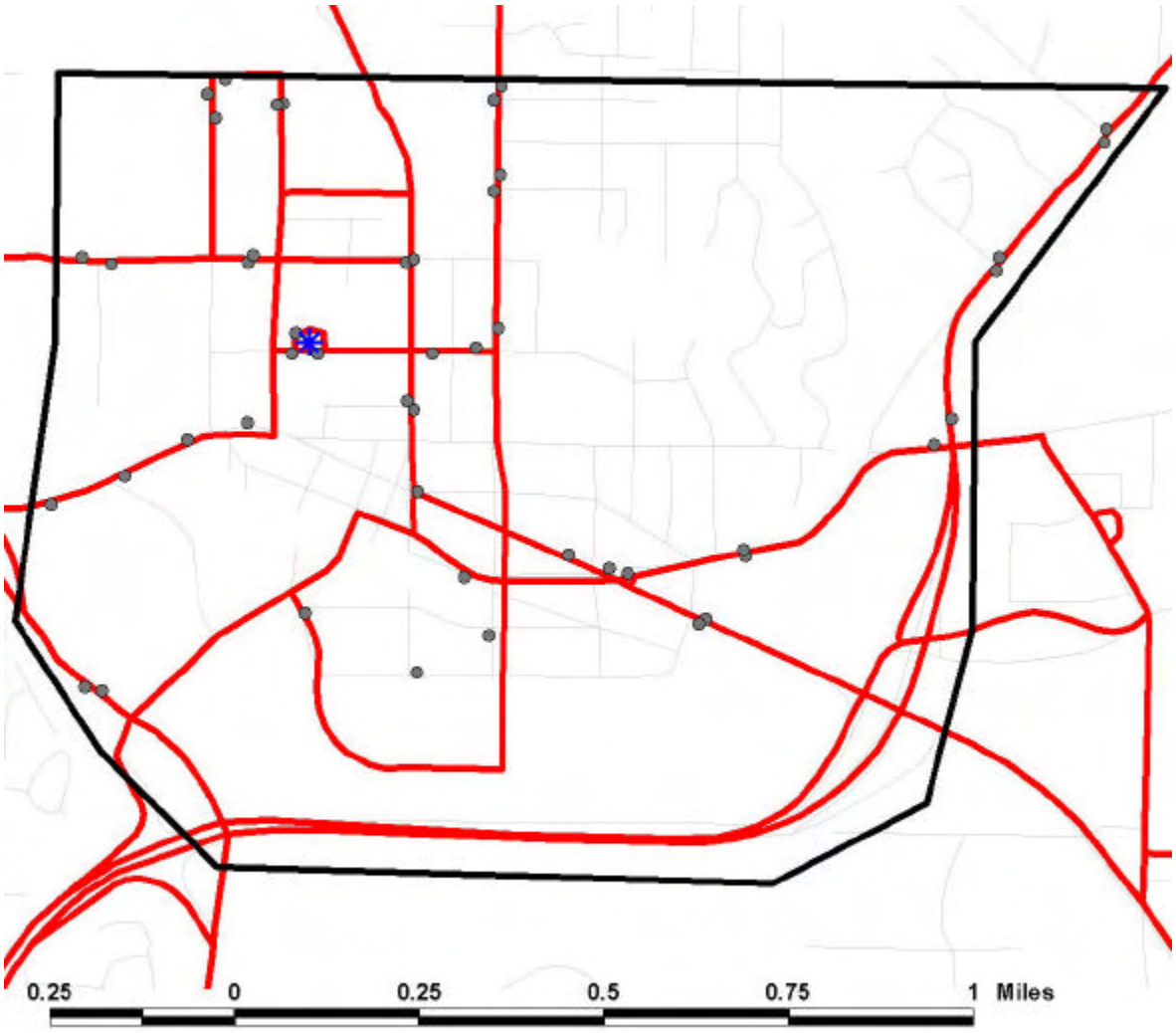
Redmond – Bike Routes

analysis:

A sidewalk inventory was produced through field observation. Redmond has a relatively complete network of public sidewalks. Sidewalks are primarily missing from some of the streets in the single family areas. And it would appear that pedestrian access to the park areas of Marymoor, south of the city, and to the Sammamish River Trail, are unclear.

map legend:

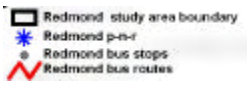
Redmond boundary
Sidewalks
Buildings
Redmond - Parcels



analysis:

Redmond is a transit hub for its immediate region. This includes daily service to Overlake, Bellevue and Kirkland and to Downtown Seattle via Overlake, Crossroads and Bellevue. Sound Transit also runs an express route to the University District on a daily basis. There are commuter services to Kent (Boeing) via Renton, Kennydale, Factoria, Eastgate and Overlake, outlying eastside centers including Woodinville, Duvall, West Lake Sammamish, and Issaquah, to Kingsgate P+R and Edmonds, and to Seattle via Mercer Island.

map legend:



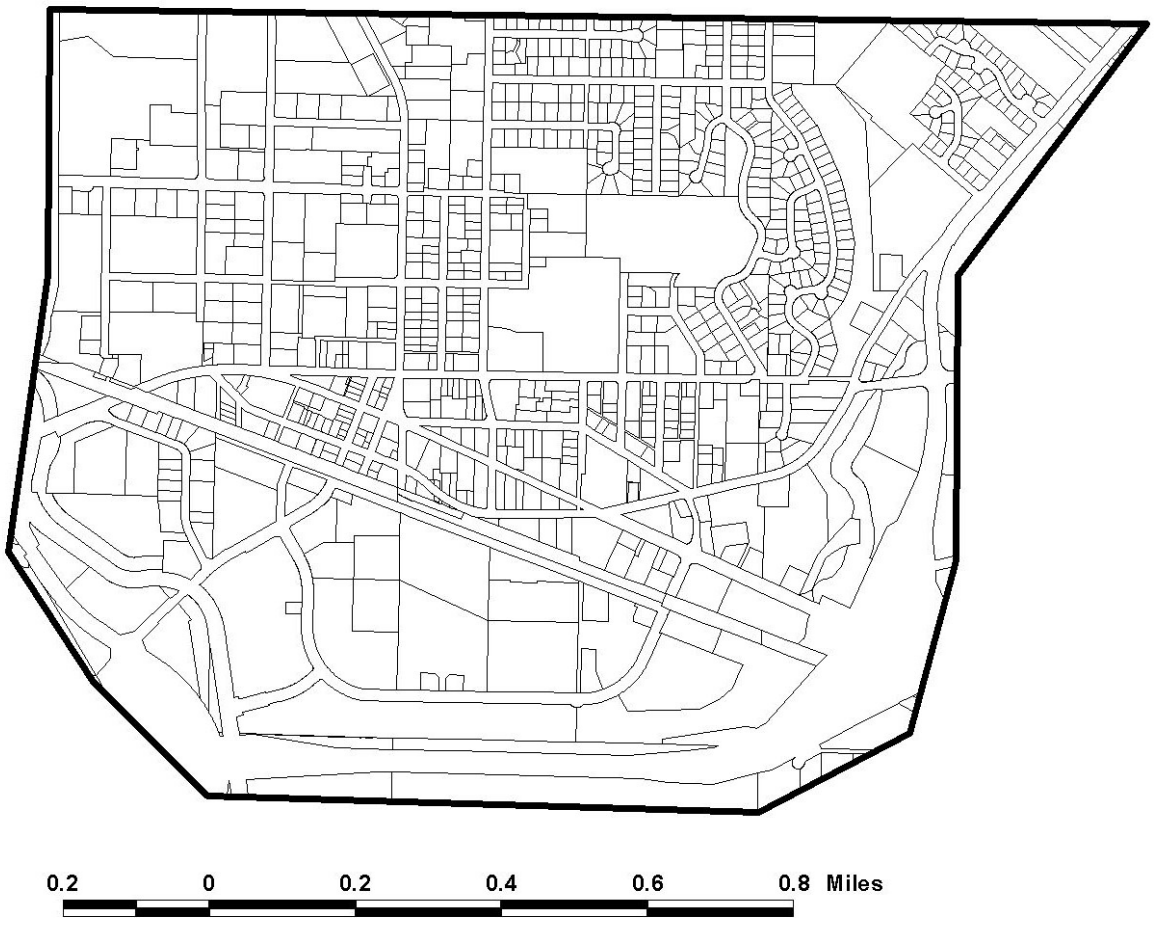
Redmond – Transit Routes

Travel Times from Redmond						Transit - SOV Travel Time	
	SOV			Transit			
Destination	**AM**	**PM**	**OP**	**AM**	**OP**	**AM**	**OP**
Seattle Northgate	31.27	32.9	30.72	99.83	110.14	68.56	79.42
Seattle University District	26.57	26.88	25.17	71.34	85.98	44.77	60.81
Seattle Center	28.88	30.09	28.02	77.32	87.73	48.44	59.71
First Hill/Capitol Hill	25.97	26.6	25.01	65.59	79.16	39.62	54.15
Seattle CBD	28.26	29.47	27.4	61.09	73.59	32.83	46.19
Bellevue CBD	14.03	13.57	13.54	68.86	71.4	54.83	57.86
Renton	29.59	34.13	31.64	99.26	109.61	69.67	77.97
Tukwila	39.59	45.35	42.35	114.06	124.84	74.47	82.49
Sea Tac	41.87	48.05	44.89	120.6	133.06	78.73	88.17
Kent	45.61	53.46	48.52	162.59	154.93	116.98	106.41
Federal Way	56.05	69.15	61.65	149.95	161.82	93.9	100.17
Redmond	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Based on Redmond as TAZ 477

analysis:

Based on the above values, taking transit takes as much as 3 times as long to reach a destination that it does to take a Single Occupancy Vehicle. Routes that have express buses – such as downtown Seattle and the University district – only take twice as long as a single occupant vehicle.



analysis:

Redmond's history as a 19th century township is evident in the small parcel sizes of its historical center, located along the strip of the railway right of way, which slices diagonally through the site. Larger parcels dominate the newer Redmond Town Center area, and the developing northwest sector, affecting the scale of development.

map legend:

Redmond boundary
Redmond Parcels

analysis:

Block sizes are smaller in the original downtown core, while larger blocks dominate the northwest quadrant. The blocks of Redmond Town Center do not show up, as the streets are private within that development. In this map it is clear how the Burlington Northern Railway right of way bisects the downtown into 2 distinct areas.

map legend:

Redmond boundary
Redmond Blocks

Redmond – Blocks

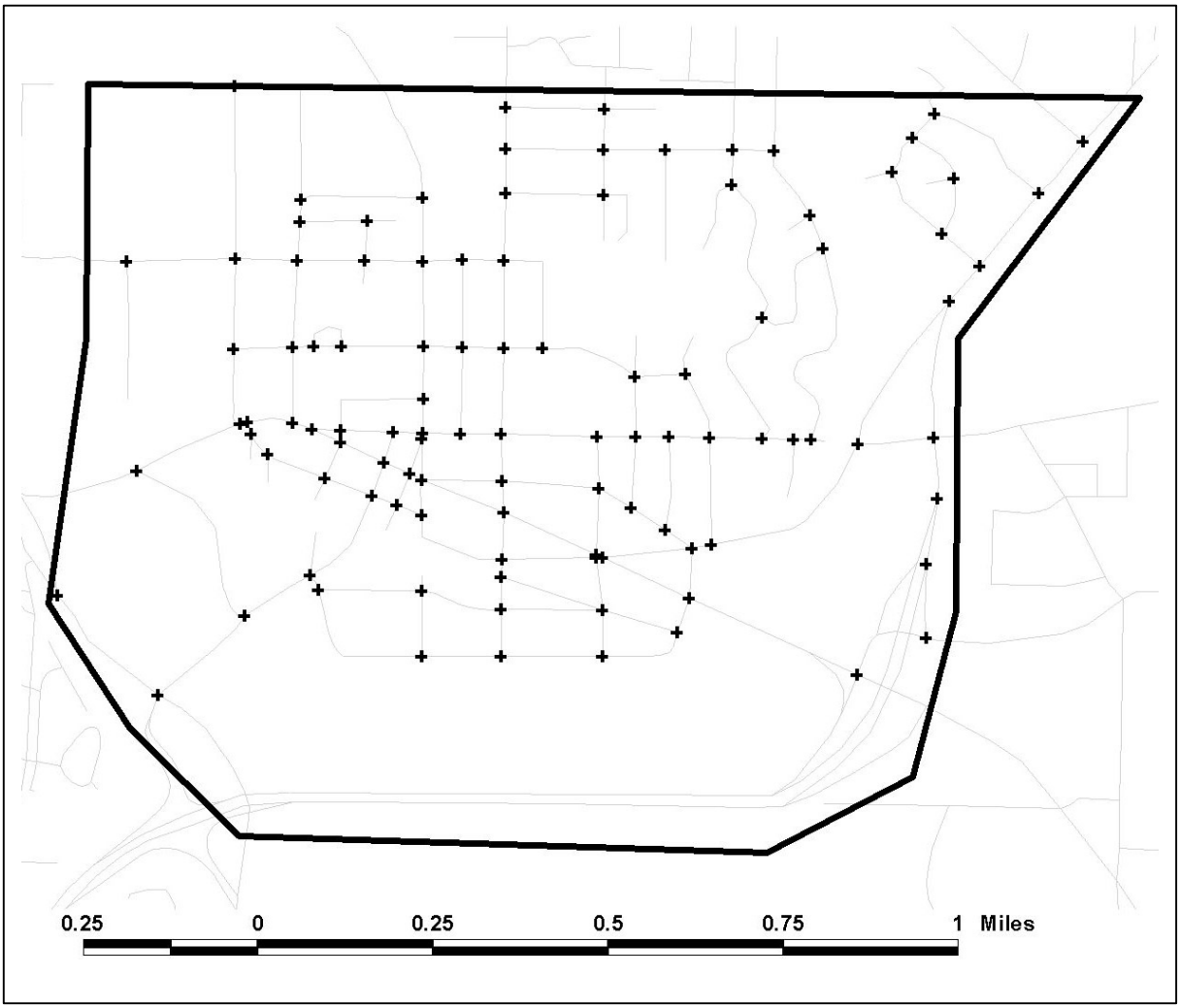
analysis:

The data for building outlines of single family houses are missing from this map, however, it is possible to note the scale of the new commercial buildings in Redmond Town Center is larger than the scale of buildings in the older downtown. There is also a variety of scales and configurations of multifamily housing.

map legend:

Redmond boundary
Redmond buildings
Redmond parcels

Redmond – Figure/Ground



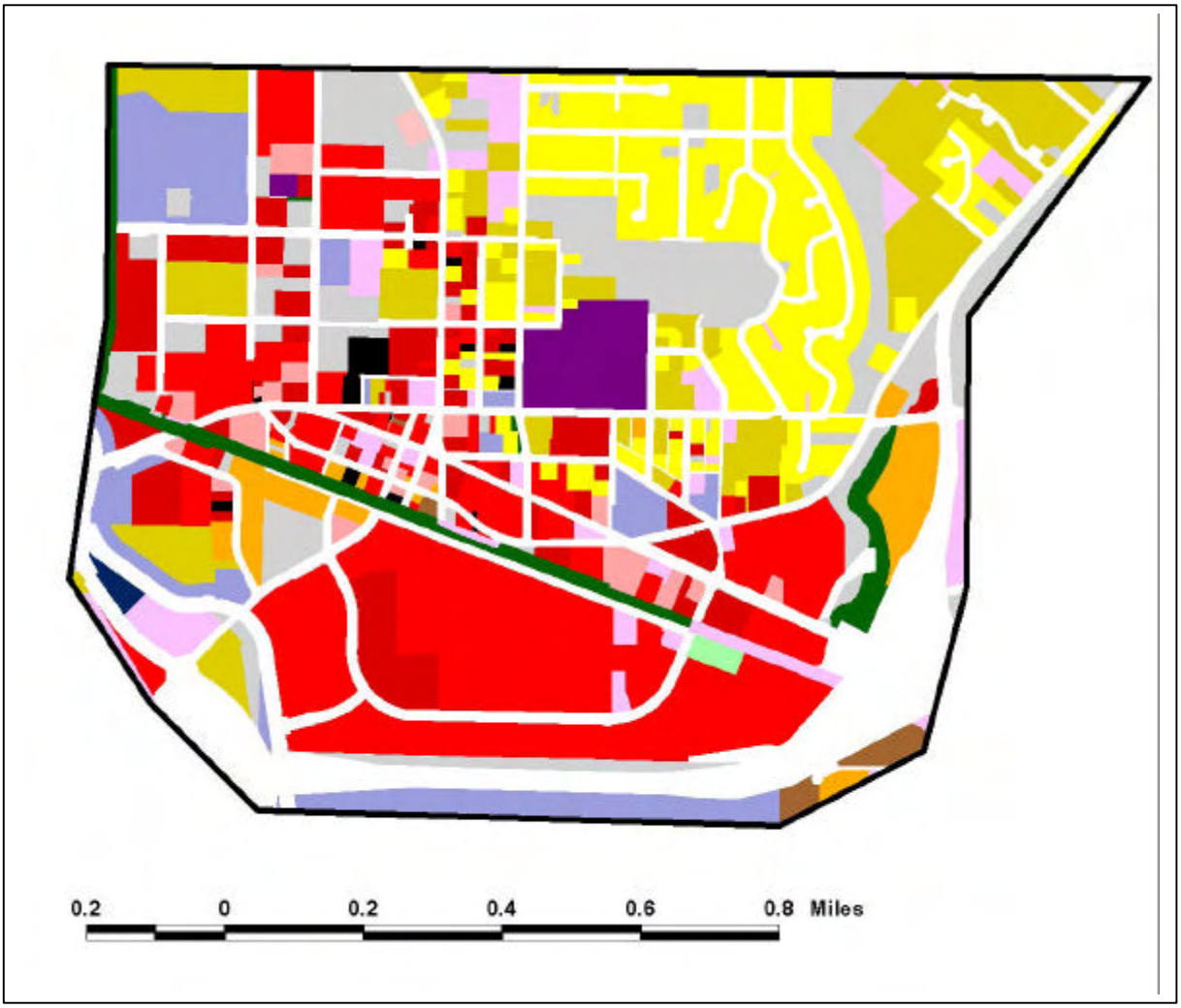
analysis:

This map shows the intersection density for Redmond. Redmond's intersection density is relatively low – the city has a basic grid layout which forms the basis of its street network, but there are many gaps in the grid.

map legend:

Redmond boundary
Redmond intersections
Redmond streets

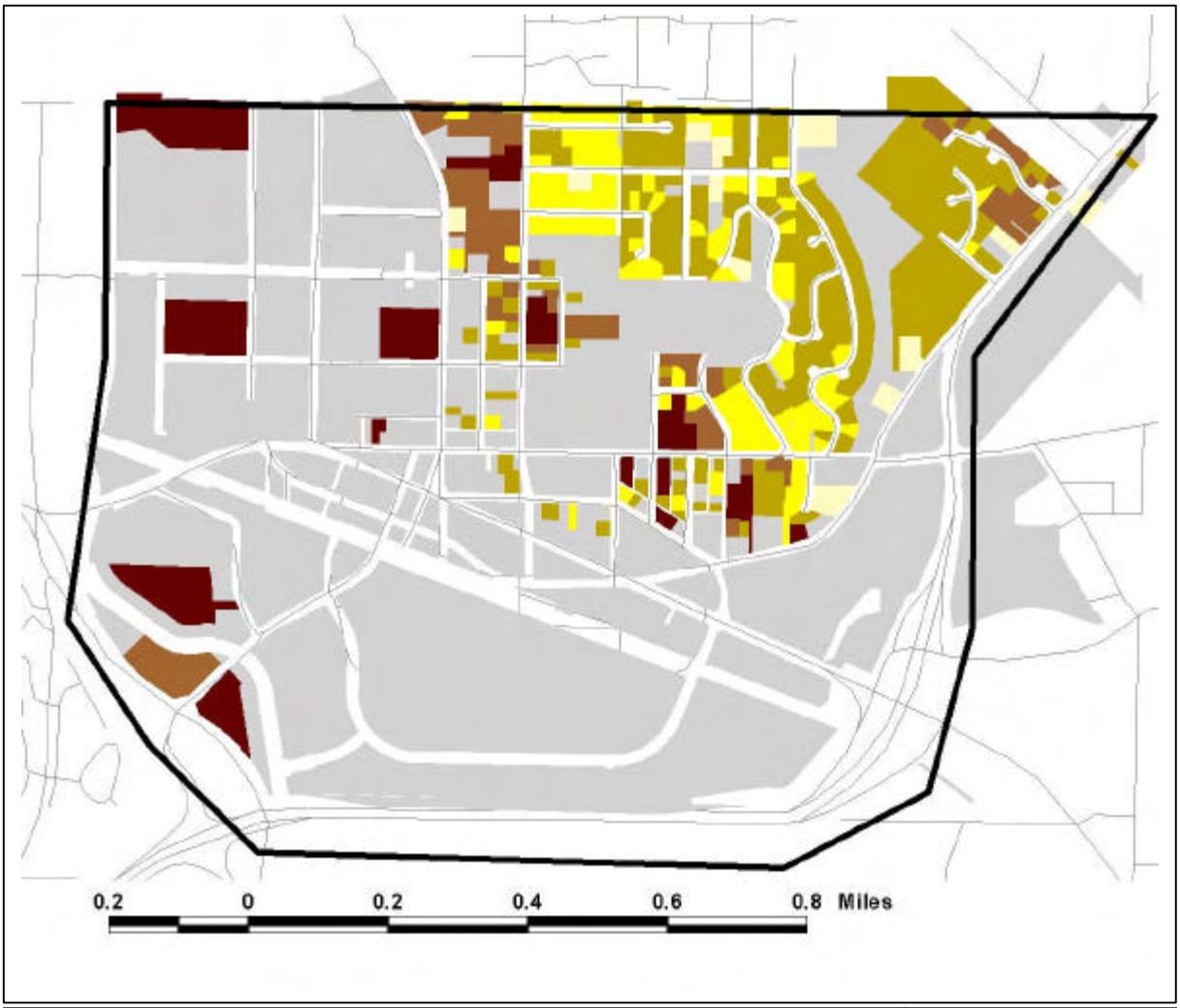
Redmond – Intersection Density



analysis:

This map demonstrates the predominance of commercial and retail development within this study area. Single family housing is found predominantly in the northeast quadrant, in Redmond Highlands. Multifamily housing can be found within and surrounding the commercial core and an enclave of multifamily housing can be found in the northeast sector. Redmond does have some manufacturing and industrial land uses, which are found at the edges of the commercial core.

map legend:



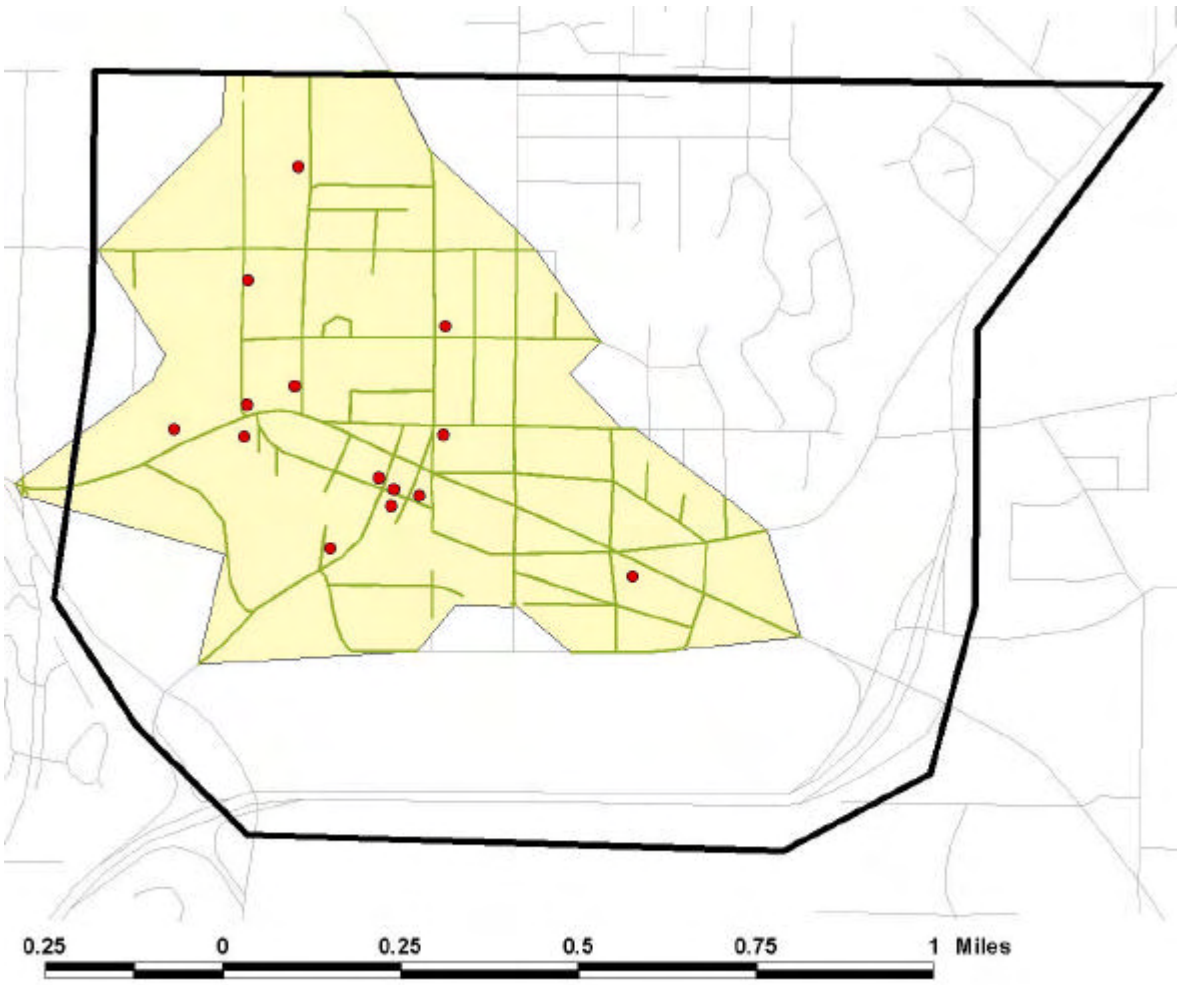
analysis:

This map reveals that most of this study area's residential density is to be found in limited areas of the city. There is very little housing in the commercial core, but there are some new projects which have added some housing. These new housing projects – which can be found on the western half of the map – are being built at higher densities.

map legend:

Redmond boundary
Redmond Residential Density
<1 DU/Ac
1 - 2 DU/Ac
2 - 4 DU/Ac
4 - 10 DU/Ac
10 - 25 DU/Ac
+ 25 DU/Ac
Redmond Streets

Redmond – Residential Density



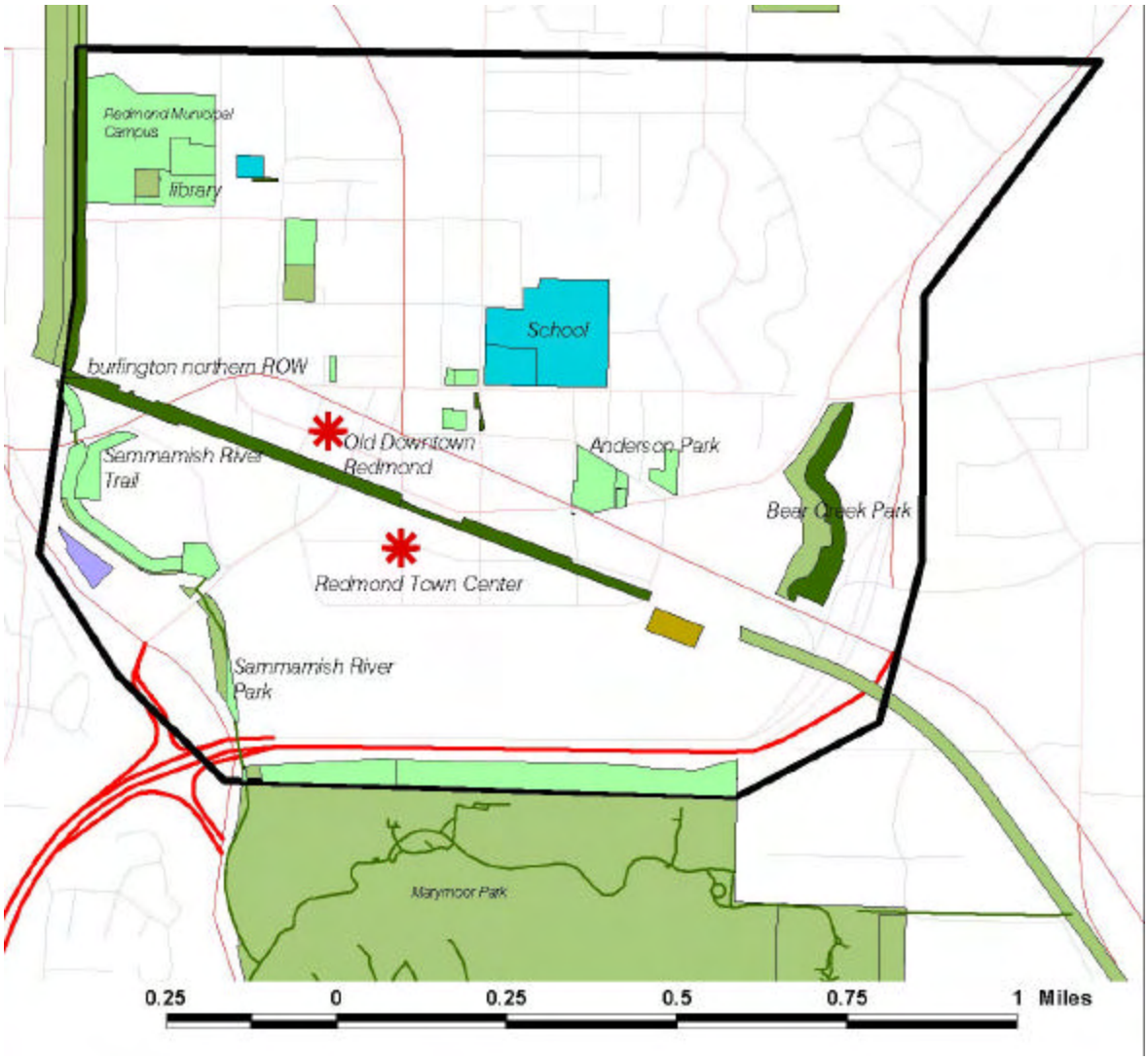
analysis:

This map demonstrates that the retail and restaurant amenities are spread out throughout Redmond's commercial core, providing a relatively large area which is within a .25 mile walk of these amenities. There are also restaurant amenities within the Redmond Town Center, which would enlarge this buffer area even more.

map legend:

Redmond boundary
Redmond restaurants
Redmond network 25.mi
Redmond .25mi buffer
Redmond streets

Redmond – .25 mi Restaurant network buffer

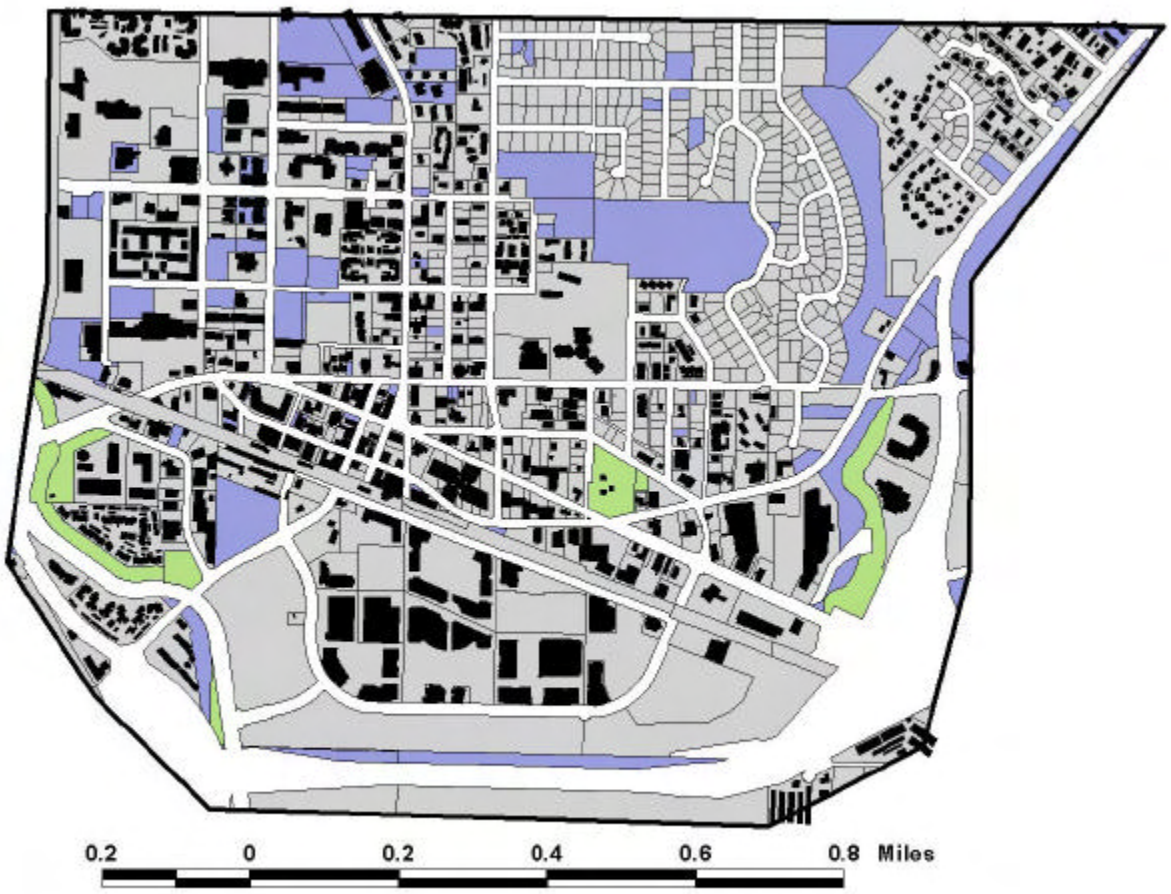


analysis:

Redmond benefits from proximity to the expansive Marymoor Park and from the linear public space of the Sammamish River trail. The vacated Burlington Northern Right of Way could also provide a valuable linear public space. The development of the Redmond Municipal Campus will create a distinct landmark and focus for the northwest quadrant.

map legend:

Redmond – Public Spaces



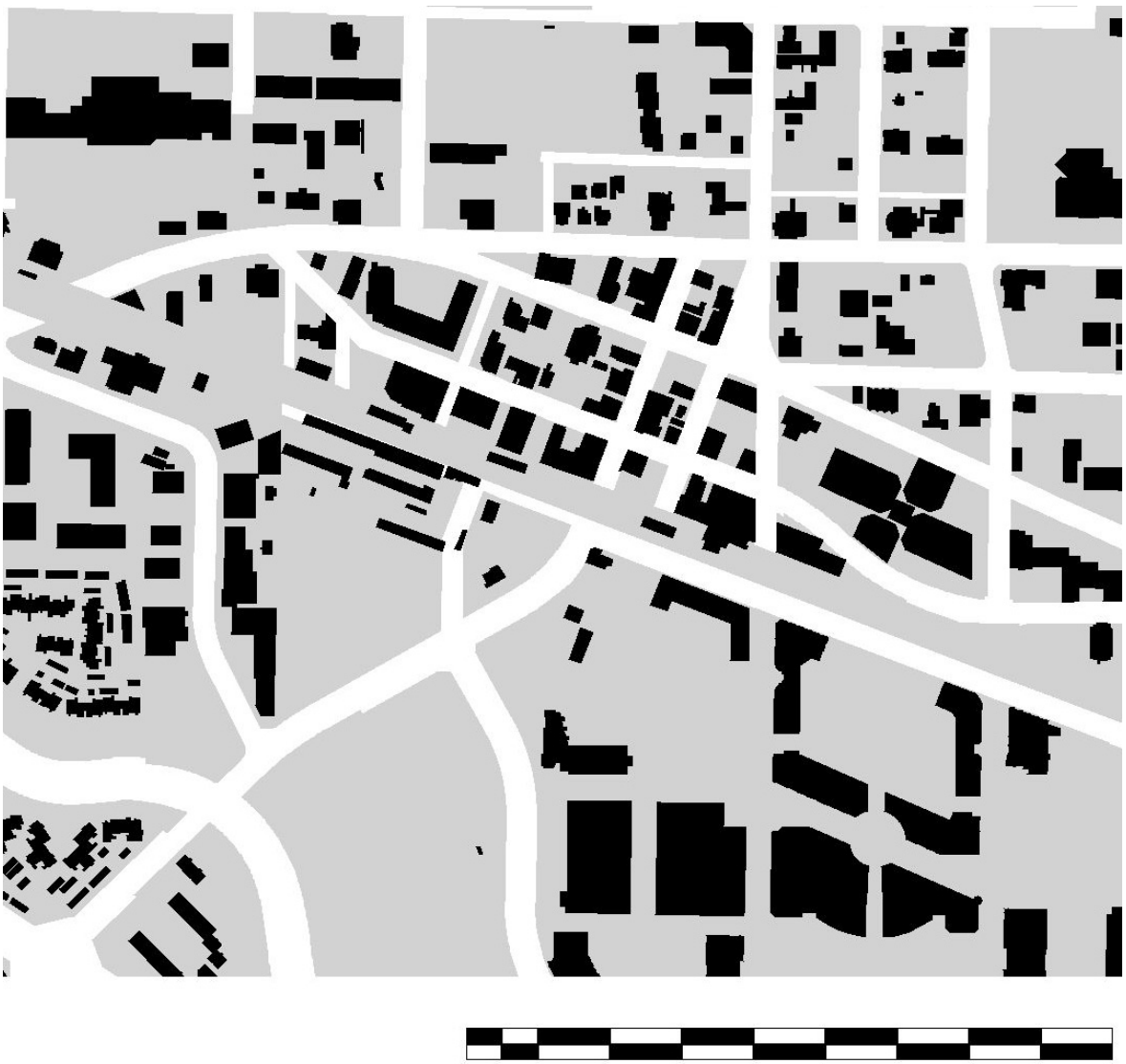
analysis:

It would appear that Redmond includes a number of vacant parcels, however, some of these parcels have already been recently (re)developed, and some of them include unbuildable topography. There are a number of vacant parcels in the northwest quadrant which would be appropriate for mixed use and high density residential development.

map legend:

- Redmond boundary
- Buildings
- Vacant parcels
- Redmond parks
- Redmond Parcels

Redmond – Empty/vacant Parcels



analysis:

This drawing of Redmond's commercial core reveals the dispersed, auto-oriented nature of the retail development along Redmond Way and Leary Way. Redmond Town Center has made a distinct attempt to create 'streets' through its building massing.

map legend:

Redmond boundary
Redmond buildings
Redmond parcels

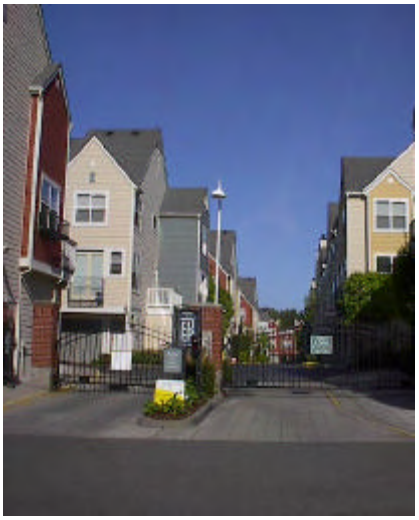
Redmond – Figure/Ground - commercial core

analysis:

The older (1970's-1980's) retail developments along Redmond Way can be characterized as strip malls. Buildings are sited away from the street, with parking lots in front catering to an auto-delivered clientele.

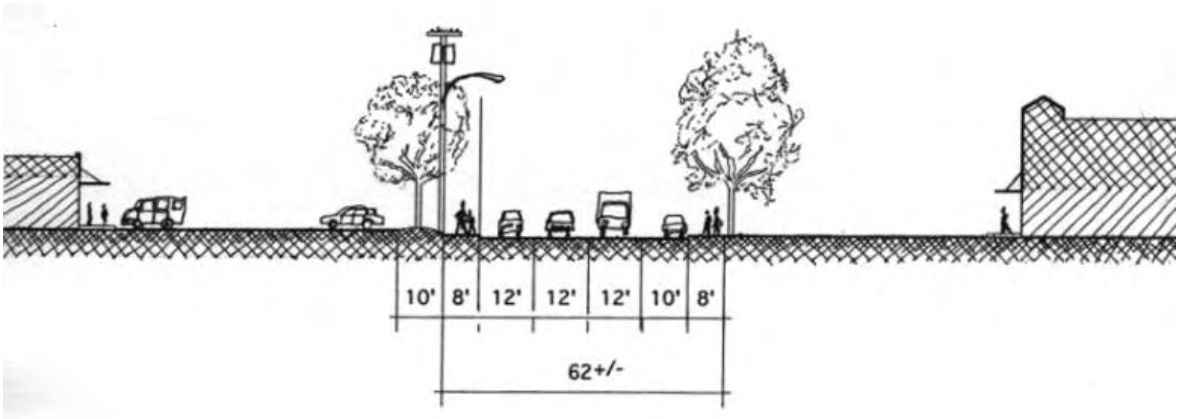
map legend:

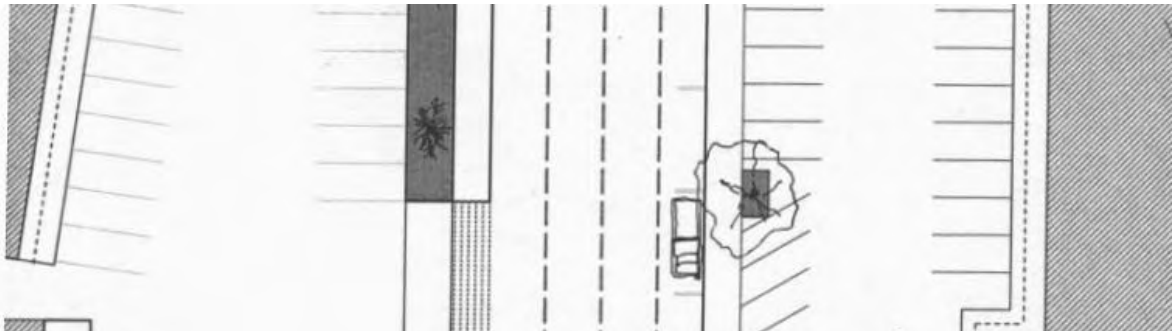
Redmond boundary
Redmond buildings
Redmond parcels

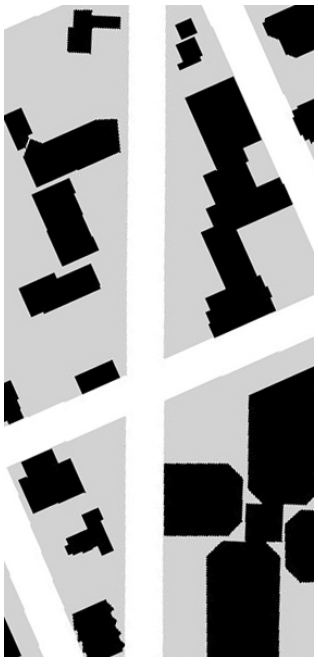


analysis:
Lion's Gate is a relatively new housing development in the Redmond downtown area. It uses some 'new urbanist' principles in its development: the building mass is brought to the street, there are front doors on the street, and units are vertical rather than horizontal. There is some commercial space on the ground level at the corner. However, it is still a gated development, and limits access to the interior of the project.

analysis:	map legend:
Most of the single family houses in Redmond Highlands are on wide (60-90') lots. Average size of a single family lot is 8500 sq. ft. Most houses appear to be 3-4 bedrooms, averaging about 2500 sq. ft.	







analysis:
Redmond's downtown is dominated by the one-way couplet of Redmond Way and Cleveland. While one-way streets are efficient for automobile mobility, they are not very friendly to pedestrians as cars tend to travel faster. The numerous strip mall developments along Redmond Way have created an indistinct public realm.

Summary of Existing Conditions

Redmond is the wealthiest and oldest of the 3 case study sites, with a median household income of $56,206 and a median age of 37.7. It is also the least ethnically diverse of the 3 sites, with approximately 34% of the population being classified as 'non-white.' This is not surprising given Redmond's eastside location, and the significant presence of high tech industry in the area. Redmond is also the least populous of the 3 sites – within the case study boundaries the 2000 census population was 4,314. Redmond's average household size is 2.64 and average family size is 3.15, which are both higher than Kent East Hill and lower than White Center. Surprisingly, despite the fact that Redmond was incorporated as a town in the early 1900's, the median date of housing unit construction is 1981; this figure reflects the explosive growth Redmond has seen over the past 20 years.

In terms of transportation systems, Redmond is well connected to the rest of King County by SR 520. There is a grid of arterials and major routes which connect downtown Redmond to outlying suburban developments and adjacent communities. The street network in much of Redmond – especially on lowland areas of the valley floor - is essentially a grid system, although the majority of its block sizes are rather large. Redmond has a fairly compete pedestrian network of sidewalks – indeed, it has a higher sidewalk density figure than White Center, and it has a network of both marked and unmarked bicycle routes, including the regional Sammamish River Trail.

Redmond is a miniature collage city of urban fabrics - it has an original late 19th century town core, a postmodern / 'new urbanist' 'town center' (in essence an outdoor shopping mall), a swath of a big block office park form, some early 20th century style platted blocks, and some late 20th century single family cul-de-sacs and loops. In Redmond, one can see not only the large buildings and large blocks of auto-oriented retail and commercial development but also the finer grain of an early 20th century downtown and the recent infill of high density residential and mixed use development. This palimpsest of urban fabrics is, interestingly, beginning to be knit together with the beginnings of 'new urbanist' infill development.

According to the analysis of the urban form variables, Redmond appears to have a good land use mix, and especially a good distribution of restaurant amenities - quite a large area is within a .25 mile network walking distance of restaurant destinations. However, it has very few residential uses present in the commercial core, although this appears to be under development (new mixed use and high density residential projects are currently being built). Redmond's intersection density is medium, and one could probably call its connectivity mediocre to adequate. There are some blocks that are very large, and the single family neighborhoods appear to have limited access routes to the downtown core. Many of the streets in Redmond, including some of the main commercial streets display the

characteristics of late 20th century traffic engineering and transportation planning. Some of the more significant commercial streets are wide, with wide travel lanes, no planting strips or buffers, little on street parking and minimal sidewalks. Retail developments along these streets are auto-oriented with parking lots in front of the buildings, making for an unpleasant and unfriendly pedestrian environment. More recent developments, however, have tried to reverse this trend by siting the buildings at the street, making wider sidewalks, and, in the case of Redmond Town Center, creating narrower streets with on-street parking.

Redmond has many assets going for it, including:

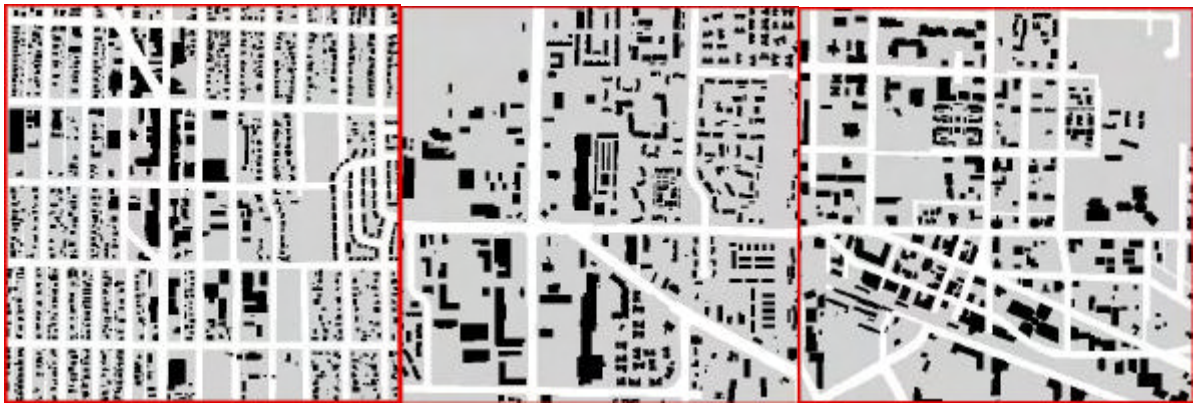
- Proximity to large recreational resources of Marymoor Park and Sammammish River Trail
- A strong economy, with more jobs than residents
- A strong and fresh comprehensive plan
- A new transportation plan
- New development of higher density housing close to the downtown core

However, it has some deficiencies and problems that need to be addressed:

- The old downtown is dominated by the one way couplet of Redmond Way and Cleveland/Avondale Rd. These are not very pedestrian friendly, not only because traffic moves too fast but also because development has stepped back away from the street.
- In the northwest corner where new housing developments are going in, the streets are too wide and don't feel intimate enough. There is a need for a greater, more defined street hierarchy, so that some of these streets begin to feel more like local streets and less like arterials.
- There is also a lack of residential density in the commercial core, and specifically a need for housing in the old downtown area and in the new town center.

Blocks

Intersection Density



Figure/Ground

Urban Form Comparison

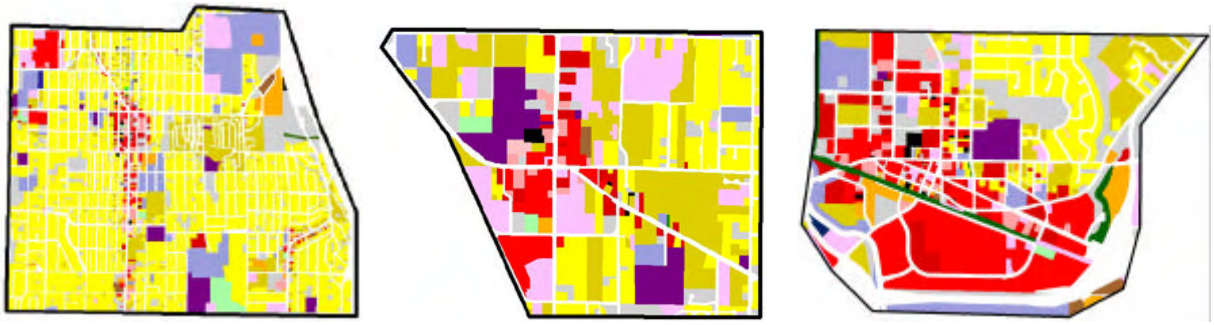
Each of the urban form measure maps on the previous page show a 1km square area focused on the commercial core of the case study site. White Center, Kent East Hill and Redmond each present different eras and types of urban form. The block diagram demonstrates the significant differences in block size, block layout and (public) street network pattern between the three case study communities. White Center has the block layout of a classic late 19th century/early 20th century 'streetcar suburb'. Blocks are relatively small – 600 feet long by 270 wide – and streets are laid out in a grid pattern. Kent East Hill demonstrates the urban form typical of late 20th century suburban development - a formerly rural community that has been subdivided to accommodate 'suburban cluster' development. Public roads follow a large grid pattern, and within the large blocks are autonomous systems of private streets within multifamily and single family developments. Kent East Hill has very large blocks – some as long as 2000 feet, and few public streets. The few streets there are tend to be laid out on a large grid, which conforms to the section and plat lines as defined by the land ordinance survey. Redmond is a curious hybrid of early and late 20th century urban forms. It has a small core with small blocks, approximately the size of those in White Center, that were created in the early 20th century. The streets and blocks are oriented to the railroad line. However, Redmond also has large blocks which are filled with late 20th century retail and commercial development. Blocks are larger, although not as large as in those in Kent East Hill. It appears as if the grid has missing pieces, or is just waiting to be filled in.

The intersection density diagram reveals the different connectivity patterns in each community. White Center has high connectivity with its gridiron of intersections, whereas Kent demonstrates low connectivity due to its enormous distances between intersections. Redmond displays a medium connectivity rate - there are areas with higher connectivity due to smaller block sizes, but then there are also areas within Redmond that have low connectivity due to the street network pattern of large blocks and dead end streets.

The figure/ground diagram illuminates the relationship between built form and open space. White Center, for the most part, displays what we would call a fine-grained development pattern - small buildings, on small lots, with most buildings placed close to the street which help define a closed-in form to the street. The commercial core of 16th Ave SW buildings are located right on the property line, creating a coherent 'street wall' for 2-3 blocks of 16th Avenue, creating a classic 'main street' feel. At the same time, it is also possible to notice significant 'holes' within the patter of buildings in White Center, representing either vacant lots of open green spaces – in either case, barriers or breaks in the continuity of urban form. Kent displays a coarser grain of development. The retail buildings are very large and surrounded by the empty space of paved parking lots. The multifamily developments that surround Kent East Hill's shopping centers do have a fine grain and are made up of small buildings often laid out on a grid pattern. However, the space in between these buildings is private, not public rights of way as in White Center.

Redmond contains a mixture of development patterns and grains - not only the large buildings and large blocks of auto-oriented retail and commercial development but also the finer grain of early 20th century 'downtown' and the recent infill of high density residential and mixed use development.

White Center **Kent** **Redmond**



Land use Mix

Residential Density

Restaurant/retail buffer (.25 mile)

Land Use Measures Comparison

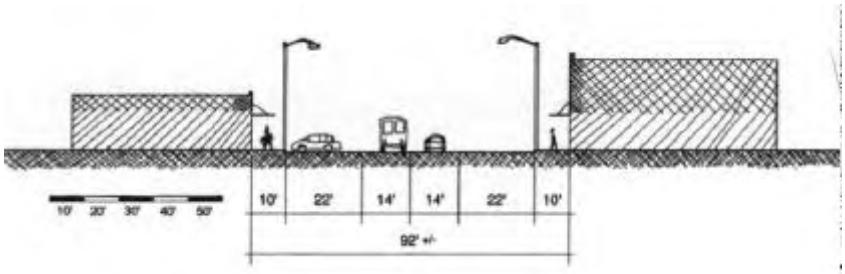
The combination of the three land use measures in the maps on the previous page reveals some of the primary reasons why none of these communities provides the optimal conditions for pedestrian and bicycle activity or transit use. The land use maps, and in particular the parcel based residential density map, reveal that all three case study communities lack any substantial residential densities in their commercial cores. The amount of grey in each residential density map represents land which has less than 1 dwelling unit/acre, and Kent and Redmond have significant amounts of grey. White Center's map is a little deceptive in that it is half the size (the study area is more than twice the size of Kent and Redmond and had to be represented at a different scale); nevertheless, it too has very little residential density within its commercial core. The strict separation of land uses is a legacy of modernist planning and zoning as well as contemporary development practices. One effect of having little to no residential in the central commercial core of each case study community is that the commercial areas become 'dead' when the commercial venues close down or shut for the day. In the suburban areas, this often means that the center of the community becomes a sea of empty parking lots at night. In White Center, the lack of substantial residential presence means that there are no 'eyes on the street', especially at night. In other words, there is no casual surveillance, and this leads to a lack of -- and a perception of a lack of --safety, especially at night.

The land use maps reveal the distribution and location of residential versus commercial and civic uses (the land use map is actual property use, not zoning). In all three communities, there is a strict separation between residential areas and commercial areas. Even taking into consideration the difference in scale in the maps, it is interesting to note the relative concentration of White Center's commercial land uses into three discrete areas compared to Redmond or Kent, which have large areas of commercial uses. Indeed, most of the land area within the Redmond case study boundary would appear to not have any residential use. At the same time, in the residential density map some blocks of high density residential exist within the grey expanse of the commercial core. These dark brown blocks correspond to new housing developments, and given the direction of Redmond's comprehensive plan, more high density residential can be expected to be developed in the future.

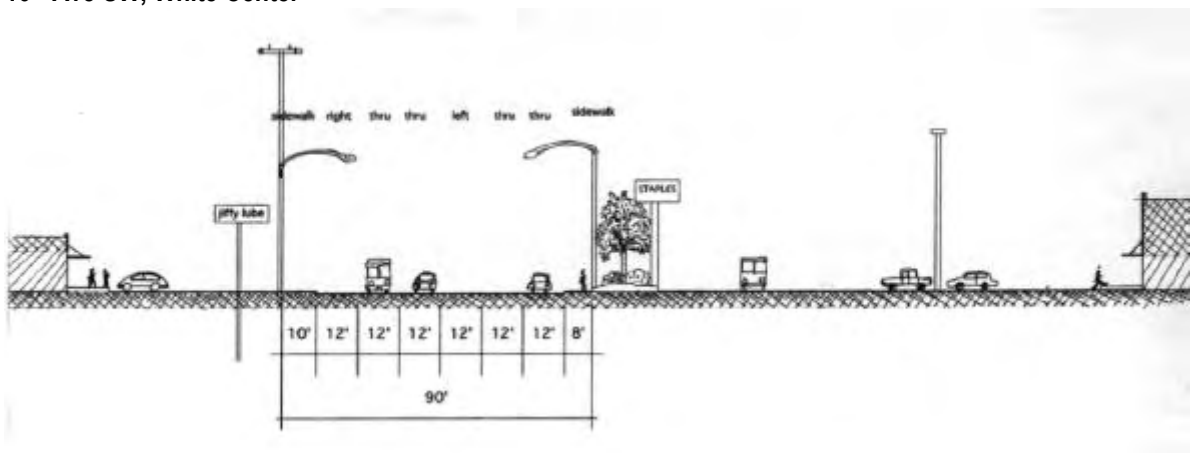
The .25 mile network buffer around restaurant locations for each case study community reveals just how small an area these commercial cores serve. Corroborating this information with the residential density and land use maps reveals that in each community, most residential areas do not have any restaurant destination with a .25 mile network walk. As revealed in the urban form measures, White Center has high connectivity due to its gridiron street network, but despite this, many people within the neighborhood still do not live within a .25 network distance of a commercial destination.

Interestingly, the spread out distribution of restaurants within its large commercial land area means that of all three case studies, Redmond has the largest land area that is within the .25 mile network buffer of restaurant destinations. However, when the network buffer map is compared to the residential density map there are actually few residences the buffer (with the exception of the newer high density developments). Kent displays essentially the same condition - there are very few residences to be found within a .25 network distance of restaurant destinations. In short, it is not surprising that walking as a form of transportation is not more prevalent within these communities, as so few residences are within walking distance (.25 mile) of commercial uses, especially restaurant and retail destinations.

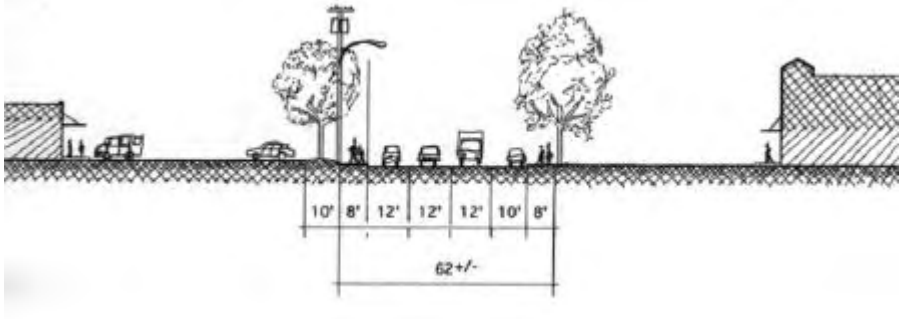
Main Street Sections



16th Ave SW, White Center



104th , Kent East Hill



Redmond Way, Redmond

16th Ave. SW.
White Center

104th Ave. S.E.
Kent East Hill

Redmond Way
Redmond

Main Street Section Comparison

The 'Main Street' sections and photographs shown on the previous pages demonstrate the significant differences in development patterns between the three case study areas. The street sections reveal the street width, the number, width and configuration of travel lanes, the presence or absence of parking, the distance between buildings and the street front, and the scale of pedestrians within these configurations.

White Center displays the form of an early 20th century commercial street - buildings are located on the property line, creating a distinct 'street wall' and a feeling of enclosure to the street. Sidewalks are narrow, but provide easy access for pedestrians. The diagonal parking provides for a buffer between pedestrians on the sidewalk and the thru traffic. It is a relatively wide right of way, but there are only two through travel lanes. 104th in Kent East Hill is also a wide street, about the same width as 16th in White Center. However, it seems much much wider because buildings are set so far back on the adjoining properties (and because the parcels and blocks are so big). The distance between the sidewalk and the building is often larger or as large as the street width. This means that pedestrians have quite a distance to walk – usually through parking lots with no sidewalks or designated pedestrian path – in order to get to the front door of the building. This is typical of late 20th century development pattern and traffic engineering that are, essentially, designed with those who arrive by automobile in mind. Furthermore, the sidewalks are narrow and there is no buffer of either parking, street trees or a planting strip to separate pedestrian sidewalks from through lane traffic. Redmond Way also demonstrates late 20th century traffic engineering and development patterns. The distance between sidewalk and building entrance is not so large as in Kent East Hill due to smaller parcel sizes and a smaller scale of retail development. But, like Kent East Hill, there is no buffer between the sidewalks and the roadway, although trees can be found in planting strips that are on private property. Parallel parking on one side of the street provides some barrier for pedestrians on the south side of the street.

In short, both Kent East Hill's and Redmond's 'main streets' – streets found within the commercial core containing many retail destinations - were designed using late 20th century street design standards, which in general do not provide adequate facilities for pedestrians. Moreover, the setback of buildings behind large parking lots renders these corridors pedestrian hostile in many places.

SUMMARY
Urban Design Conditions of all 3 Case Study Sites

Using the comparison of the urban form measures and urban design analyses, it is possible to notice significant similarities and differences amongst the three case study sites. These three communities all share a lack of residential density, especially in the commercial core, a low pedestrian connectivity, disconnected pedestrian facilities, and not enough destinations such as restaurants or convenience stores within a .25 mile walk of residences.

The land use variables reveal that all three communities lack any substantial residential densities in their commercial cores. Indeed, most of Redmond's land mass does not have any residential use – although the introduction of large new blocks of high density housing is a new trend. It is also interesting to note the relative concentration of White Center's commercial land uses when compared to Redmond or Kent, which have large plots of land coded for land use.

White Center has good street connectivity, but despite this many people within the neighborhood still do not live within a .25 network distance of a commercial destination. The pedestrian network map is also revealing, as most of the single family blocks in the King County portion of White Center do not have sidewalks. Kent East Hill's low connectivity and low walkability scoring is due in large part to its large block size and low intersection density. Interestingly, Kent East Hill also appears to have the largest amount of land mass that is used for higher density housing.

While they share many of the same deficiencies in their urban form, each of these communities has its own unique character. White Center has the essential layout of a classic streetcar suburb - it has a gridded network of streets, a distinct main street with a pedestrian friendly urban form. However, it lacks anyone actually living on 'main street,' which would make it feel more like the mature streetcar suburb it could be – like its more affluent urban cousins Fremont, Wallingford or Queen Anne. It has the essential structure of a well connected and walkable neighborhood but it needs a little more meat on its bones. It has diversity, and the vitality from this diversity is something that should be enhanced and allowed to flourish.

Kent East Hill is a classically anonymous late 20th century suburban cluster. It has the same set of chain stores, big boxes, and fast food outlets that one would find in any suburban cluster. There are some comfortable and pleasant multifamily environments but they are oases unto themselves due to the lack of pedestrian connectivity.

Redmond has a patchwork quilt of different development eras – it has an original 19th pioneer town core, a new postmodern new urbanist town center, cul-de-sac single family neighborhoods, sprawling office parks, and a small little section of an early 20th century

plat. If these pieces are being pulled together by a new invigoration of the public realm and new transportation infrastructure, it could become a vibrant small city with a diverse collection of neighborhoods.

Transportation Systems – Summary and Comparison

Each of the case study areas has easy access to one of Puget Sound's major highways/freeways - White Center to SR 509, Redmond to SR 520, Kent East Hill to SR 167. In terms of their internal street network, each case study community contains a basic grid of arterials and collectors. The vintage of each community is reflected in each of their street network systems. White Center is an early 20th Century classic 'streetcar suburb' with a gridiron layout of streets and small blocks. Redmond has a small core of early 20th century gridiron layout but it is full of holes and needs completion in order to create a better connected network. Kent East Hill's arterial grid is the largest, and the study area has a small network of public roads, with many private roads taking the place of local streets. Most of these private roads are self-contained systems – that is, they do not create a connected network and are instead isolated, often with only oone or tw outlets to a major arterial or collector.

While each of the communities has bike routes, most of these routes do not include designated facilities – no bike lanes marked on the roadway, no separate paths, no signage. Only Redmond has designated and marked bike lanes, but this system is partial and incomplete. Bike facilities are minimal in Kent East Hill and White Center.

With respect to pedestrian facilities (public sidewalks, designated trails and paths), Redmond has a relatively complete network of public sidewalks, but Kent East Hill and White Center do not. Kent East Hill has many streets with only partial sidewalk facilities – the pedestrian network is very disconnected and incomplete. Most (but certainly not all) of the streets in White Center that fall within the City of Seattle have sidewalks, while on the King County side most streets do not have sidewalks. The streets with sidewalks tend to be arterials or collectors and streets immediately surrounding the commercial core of 16th Ave SW and Roxbury. Kent East Hill has only a partial system of sidewalks - most of the major arterials have them, but on 256th they end shortly east of 104th. Some private roads have sidewalks, but most do not. There is little linkage or connection between the private sidewalks and the system of public sidewalks.

Introduction

The intention of this section of the report is to articulate a range of land use, urban design and transportation strategies and investment options available to King County. Strategies have been chosen that make sense for the County as a whole and for the communities within it, and that also make sense for each case study site, given its specific deficiencies and assets. The underlying goal behind these strategies is to (re)develop a built environment with a more compact and connected urban form so that residents will have more transportation options and so that walking, biking and the use of mass transit are increased. This will result in both increased air quality for the region and in overall better public health due to more active lifestyles.

Methodology

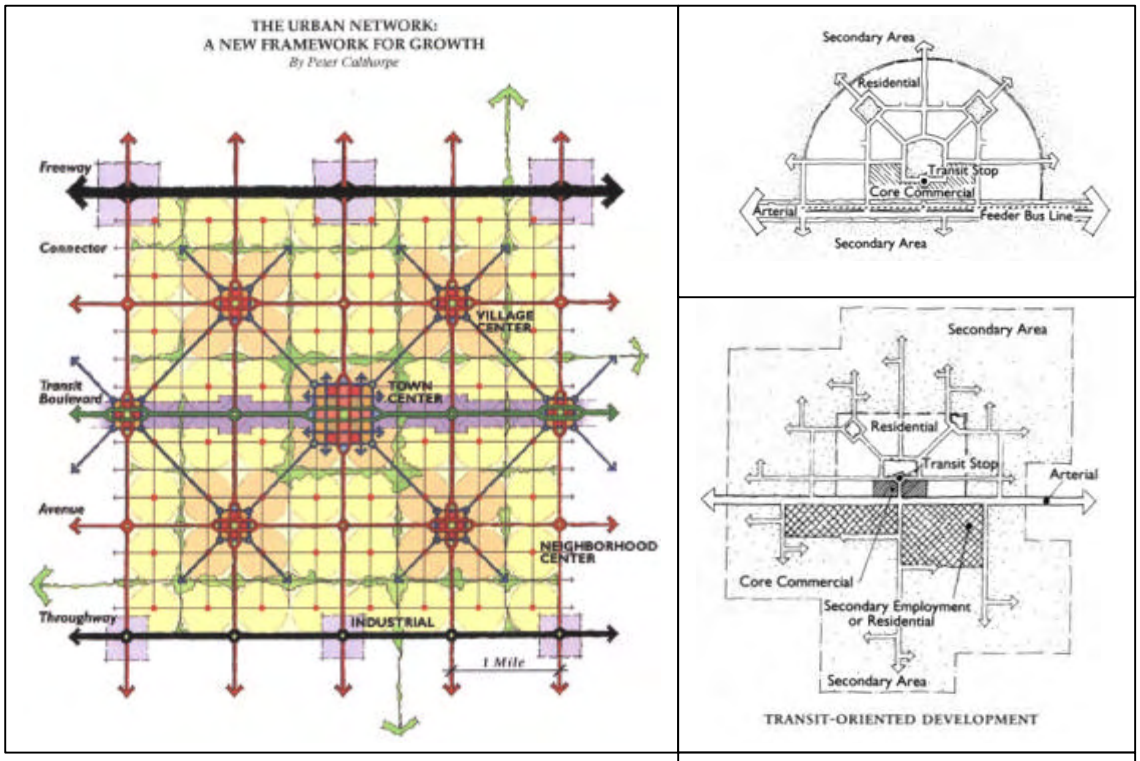
The previous section examined these three case study communities along a number of urban design and land use variables to determine each community's assets and deficiencies, pinpointing urban form issues each community needs to address. We have scanned and reviewed contemporary North American and especially west coast urban design research, policies and practices for examples of transit oriented development and design, and for denser housing typologies appropriate for the west coast suburban context. We have examined both public policies and investments as well as private development opportunities. We've chosen some best practices and best typologies as ways of illustrating a range of land use, transportation and urban design policies, strategies and investments the county and municipalities within it could follow in order to help shape a built environment which would be more conducive to active living. These strategies and options are intended to be diagrammatic and conceptual, and would need further research before implementation, but recommendations work in synchronicity with the plans and policies of other governmental jurisdictions within King County.

Far from mandating any one particular method of investment or development, we believe that there is a diversity of strategies that can be followed that would result in more housing and transportation choices for all members of the King County community. We have tried to choose land use and transportation investments that will serve not only land use targets and transportation capacity goals, but that will also help to improve public health, air quality, environmental sustainability, and civic accessibility. The private sector would also stand to benefit from the increased efficiencies of infill and high density development.

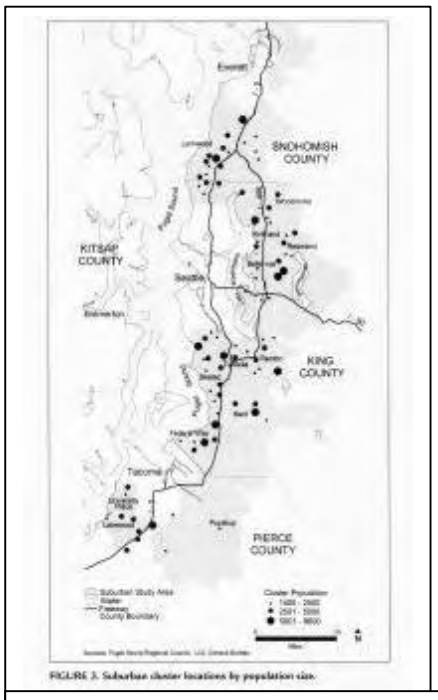
The problems of our current built environment may seem insurmountable – this LUTAQH research has demonstrated the negative effects between low density development patterns and public health and air quality. But the urban environment does and can be changed over time with directed planning, policy development and strategic investment by both public and private sectors.

Summary of Urban Design Strategies

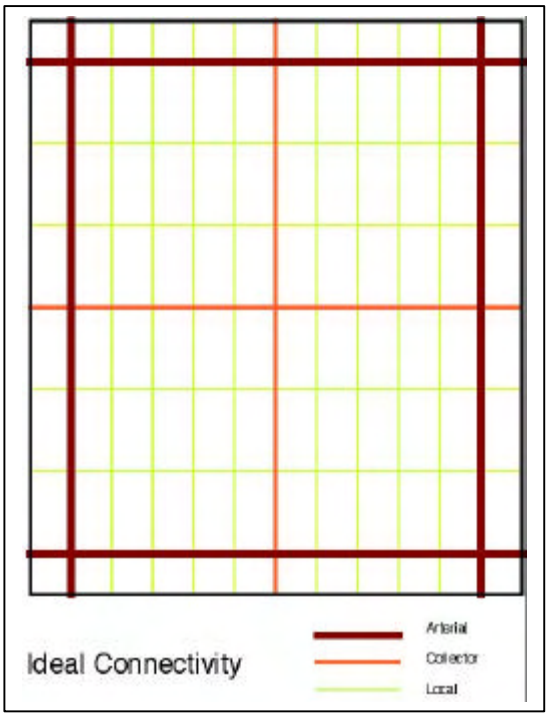
Each of these communities is one form or other of a center or hub – an urban village, a neighborhood, a city – with differences in scale or regional importance. Given their existing urban design conditions, these centers all have the right ingredients to become transit oriented developments. They all have a diverse and concentrated mix of land uses that should encourage walking - however, they all lack density and adequate pedestrian connectivity and need some help to turn into fully accessible, coherent, walkable communities. With some site design modifications and some changes to the transportation infrastructure, these centers could become more like the Transit Oriented Developments (TODs) that new urbanist planners like Peter Calthorpe advocate for the rapidly growing west coast. The region needs to take advantage of these existing clusters and use its land use and transportation policies and investments to help shape them into a connected network of transit-oriented villages and hubs. Strategic public investment in infrastructure systems can also help shape an urban network for the region – one that has improved public health, air quality, transportation choices, and a diverse range of humane and accessible environments in which to live.



Source: Peter Calthorpe *Next American*



Source: Moudon and Hess, Suburban Clusters.



Three primary/essential urban design and transportation strategies are applicable to all three communities, and to most clusters and centers in the Central Puget Sound Region:

Increase residential density in the commercial core by allowing and promoting more mixed use and high density residential development.

Create a Greenways/public ways system over the next 10-100 years - an integrated, connected network of bicycle and pedestrian routes that connect public spaces at three levels: within each neighborhood center, between neighborhood centers, and regional trails which connect regional destinations.

Street design improvements to the major community streets. Create a main street in each community through streetscape improvements and street design changes to provide facilites for pedestrian and bicyclists.

Each of these strategies addresses multiple concerns and issues that were made evident in the case study analyses. The following pages explain each of these three major strategies in more detail.

Increased Residential Density through Infill Development

The first major strategy urban design and land-use policy strategy is to **increase residential density** in the commercial core by allowing and promoting mixed use and high density residential development.

What is evident from the urban form and urban design analysis is that each site essentially lacks residential in their commercial and retail cores. The addition of residential units to the commercial core addresses a number of issues:

- It adds to the overall residential density of the neighborhood
- It increases the number of people living in areas that currently have zero to low density, will increase the liveliness of the commercial areas and the number of eyes of the street. This will increase the perception of safety within the commercial areas.
- The addition of new mixed-use buildings could aid in the economic and social development of the community.
- Increased residents in the core will increase the demand for transportation and transit services.

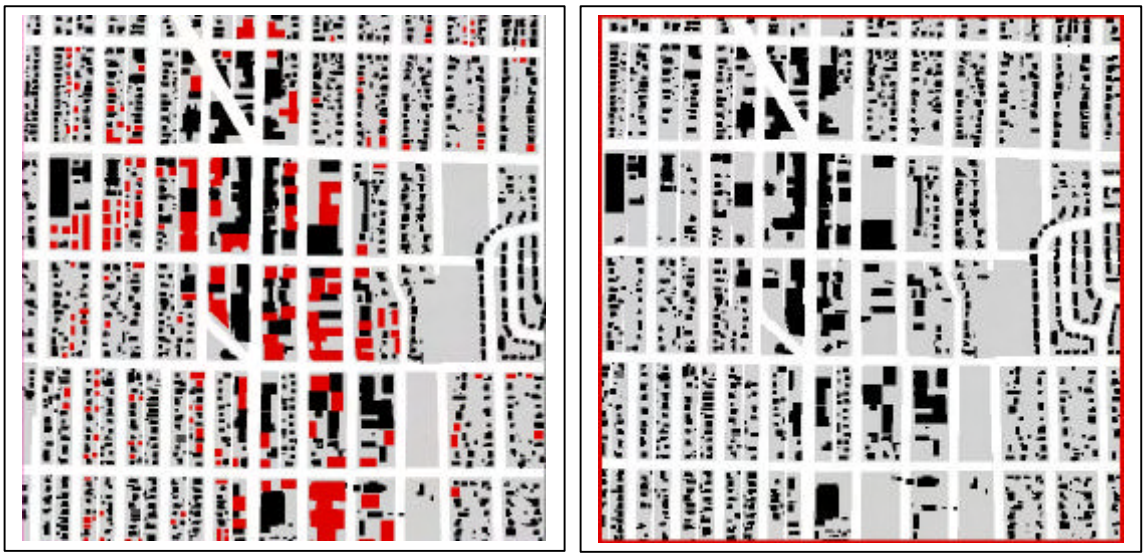
Unfortunately, density is still a bad word to many citizens, and concerns by existing residents, can raise difficulties for implementation and development. It is crucial to remember that high density development can also significantly benefit from careful site design and considered architectural expression. Design guidelines and a design review system have proven to be successful at helping to create more appropriate design expressions, as well as a forum for local resident input into development decisions. Therefore, increased residential density works best when there is also a design guidelines system that would help to guide and shape the form that the incrementally constructed built environment would eventually take. A design guidelines system can be developed that allows for resident concerns and preferences to be heard and voiced and helps reflect community values and community desires about what kind of place it is and what kind of place it wants to become.

Design matters, and there are many ways to develop residential density. Each of the case study communities has an existing character, and different forms of housing will be more appropriate in different situations. We have provided some appropriate prototypes for each of the three communities.

What also needs to be made clear, and the LUTAQH study results can now back this up, is that denser development, with good pedestrian connectivity is beneficial for numerous reasons: individual and public health, air quality, and that it will give people more choice in where to live, how to get around the city, and how they want to spend their time. In short, it is a life style issue. These aspects of additional density, which many Americans are certainly nostalgic for, could be emphasized, such as -

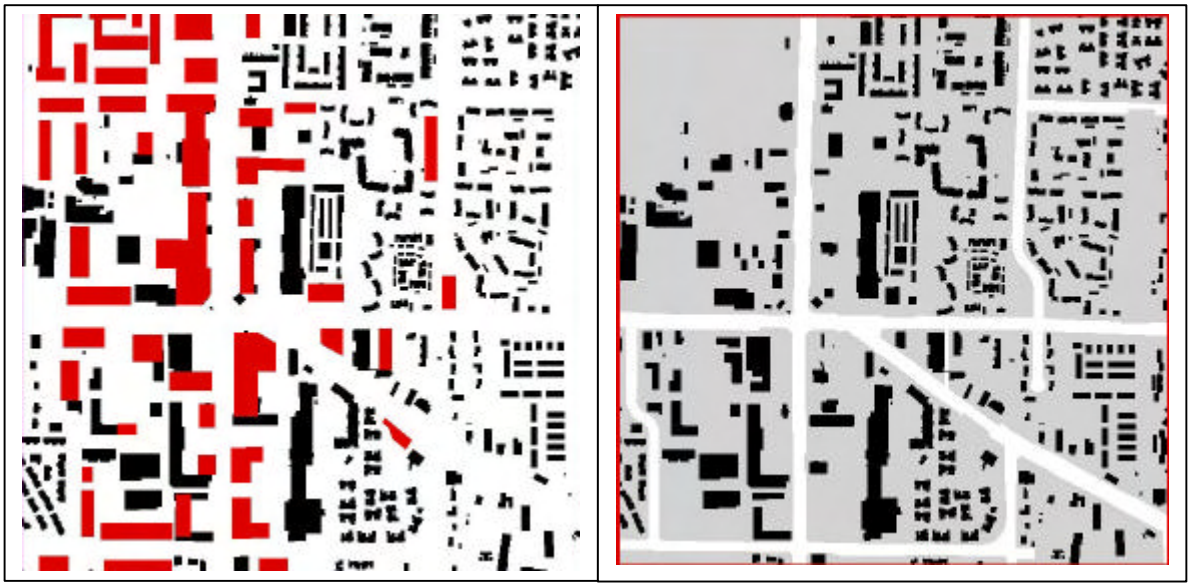
- *Being able to walk to the bank, or a pub, or your favorite local restaurant*
- *Or send your kid to the store by bike to go get some milk*
- *Walking the kids to the park for a play on a swing*
- *Going to garage sales in back alleys in the summer*
- *Or to walk to a movie or your favorite ice cream shop in the summer*
- *Hearing the band play in the park in the summer*
- *Biking to the market on Saturday*
- *Taking a stroll after dinner, and saying hi to people you know as you pass them on the street or path*
- *Going for a jog in the morning on the trail that circum navigates the neighborhood*
- *Biking along a regional trail to a county park for a Saturday afternoon picnic*

Such development could be labeled 'downtown living … suburban style' or 'Suburban village living.'



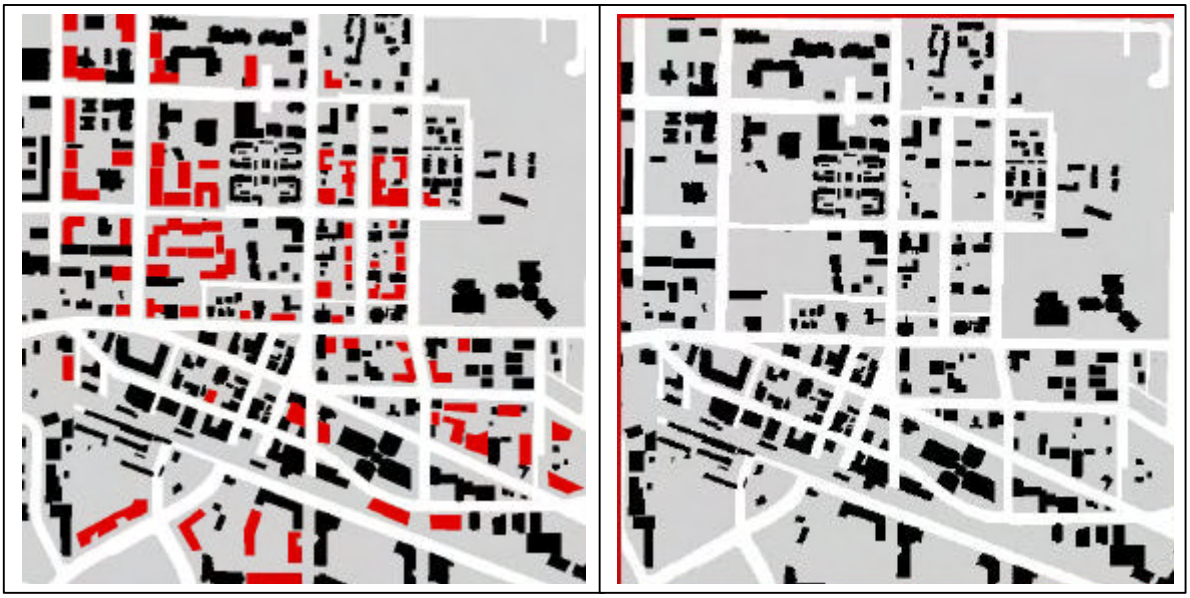
White Center Infill development:

This diagram is intended to demonstrate what the central core of White Center might look like after considerable infill development. New building footprints (in red), reflecting mixed use and higher density housing, have been added to commercial areas, and footprints (in red) reflecting duplex, row house and coach house infill to single family areas have been added. Most of White Center would retain its fine grain single family character but the commercial core of 16th and Roxbury would gain significant residential density and become a lively town center where people would live, work, shop, hang out in cafes and restaurants, go to a film, pick up a video, and take advantages of other services required during their everyday lives.



Kent Infill Development:

This diagram is intended to demonstrated what the central core of Kent East Hill might look like after considerable infill development. Building footprints (in red), reflecting mixed use and higher density housing, have been added to commercial areas. The hub of 104th / 256th would become more urban in character, with housing above some retail and commercial establishments. Squares and landscaped enclosed courts would replace seas of parking lots and the streets would become more defined.



Redmond Infill Development :

This diagram is intended to demonstrate what the central core of Redmond might look like after considerable infill development. Building footprints (in red), reflecting mixed use and higher density housing, have been added to commercial areas. The northwest quadrant has filled in with housing, making it a dense neighborhood with lush green streets and neighborhood conveniences. Many people walk or bike to work, and many others work at home in their live/work loft condos or townhouses.

A system of Greenways/Publicways

All of these communities, and the entire region, needs an integrated and connected network of designated pedestrian and bicycle routes. These routes can include both on street and off-street facilities, but the key word is connected.

A number of other cities and regions have begun to develop such systems, including Denver, Minneapolis, Boston, and Vancouver B.C. While greenways are normally thought of as linear park spaces which include pathways or trail systems, an expanded vision of the greenways concepts includes designating a system of walking and cycling routes through neighborhoods as well as through natural and open space areas. One of the essential tasks of greenways/public ways is to create safe routes to walk and bicycle that connect the significant public spaces within and between neighborhoods, including parks, schools, shopping districts, community centers, recreational facilities, libraries, public buildings, and natural open spaces.

A model for such connectivity can be found in the Vancouver (B.C.) Greenways / Publicways plan. Greenways are intended as streets specifically designed and designated for pedestrian and bicycle connectivity. Originally developed in 1992 out of Moira Quayle's *Urban Landscape Task Force Report*, Vancouver's Greenways Plan has now been substantially implemented, although there are still sections under development. The intention of the Urban Landscape Task Force was to "improve the understanding of the value of the urban landscape and to recommend how to manage, protect and enhance it". Greenways / publicways developed as a strategy to accomplish a number of the essential actions the task force established as its plan. Specifically, Greenways / publicways became a way to create connections, celebrate the city's legacy, develop a public realm, reclaim streets for bikes, reinforce the city of urban villages and to promote ecological literacy. In short, Vancouver's greenways are intended to make walking more interesting, cycling safer and more convenient and to reduce the impact of the car on air quality and on public health.

There are two levels of greenways in Vancouver: City Greenways and Neighborhood Greenways. City Greenways are intended to connect neighborhoods and significant public spaces, and to provide routes for pedestrians and cyclists to cross the city. Neighborhood greenways are intended to provide intra-neighborhood connections, connecting important public spaces – parks, community centers, shopping streets and places of other spaces of special community meaning. Neighbourhood Greenways are initiated by local residents and are often developed with community participation, including donated labor. They are intended to reflect local character and identity by providing opportunities to express the unique character of the area and by adding details and activities to the public landscape. They are maintained by the community once completed.

Source: City of Vancouver

"Vancouver Greenways can be waterfront promenades, urban walks, environmental demonstration trails, heritage walks, and nature trails. Their purpose is to expand the opportunities for urban recreation, to provide alternate ways to move through the city and to enhance the experience of nature, community, and city life".
(from the City of Vancouver website:
http://www.city.vancouver.bc.ca/engsvcs/streets/greenways/)

Greenways connect public spaces via linear public corridors; they can be defined by natural features, such as a shoreline, or they can be a shared public roadway. A by-product of a greenways system would be the creation of a coherent civic realm – the network of schools, recreational and public facilities which would be connected to the the semi-public realm of commercial culture (restaurants, retail, entertainment venues, and 'third places' such as coffee shops and book stores).

An integrated network of Greenways/Public ways would address the following problems and issues identified by the case studies and the regional analysis:

- Better pedestrian connectivity combined with additional residential density would encourage and enable people to walk more – increased walking would have beneficial side effects for public health as well as air quality.
- It would create much needed pedestrian and bicycle infrastructure.
- It could help develop additional park infrastructure in the form of linear open spaces and greater recreational opportunities.

A Greenways/publicways system would operate under the following principles:

- Greenways/public ways provide infrastructure for walking and biking not only a means of recreation but also as a mean of transportation.
- There should be an integrated and connected network of greenways/publicways
- Most residents should be within no more than five blocks of a neighborhood greenway, preferably within three.
- There should be three levels of connectivity:
  - Intra-local – within the neighborhood
  - Inter-local – connecting adjacent neighborhoods
  - Regional trails and connections
- Where possible, greenways should take advantage of natural features, topography, open spaces, water bodies, green spaces, viewpoints, shorelines, etc.
- There should be circular routes within each neighborhood so that one can start from a place and return to it via a different routes. This is more amenable to walking as recreation – people more will readily go for a circular walk.
- There should be enough space for both bikes and pedestrians, and where possible there should be separate paths for bikes and pedestrians.
- Greenways often work best when they are not on arterial streets, but instead on streets adjacent to arterials: the heavy traffic and speeds found on arterials do not permit a pleasant walking or cycling experience.

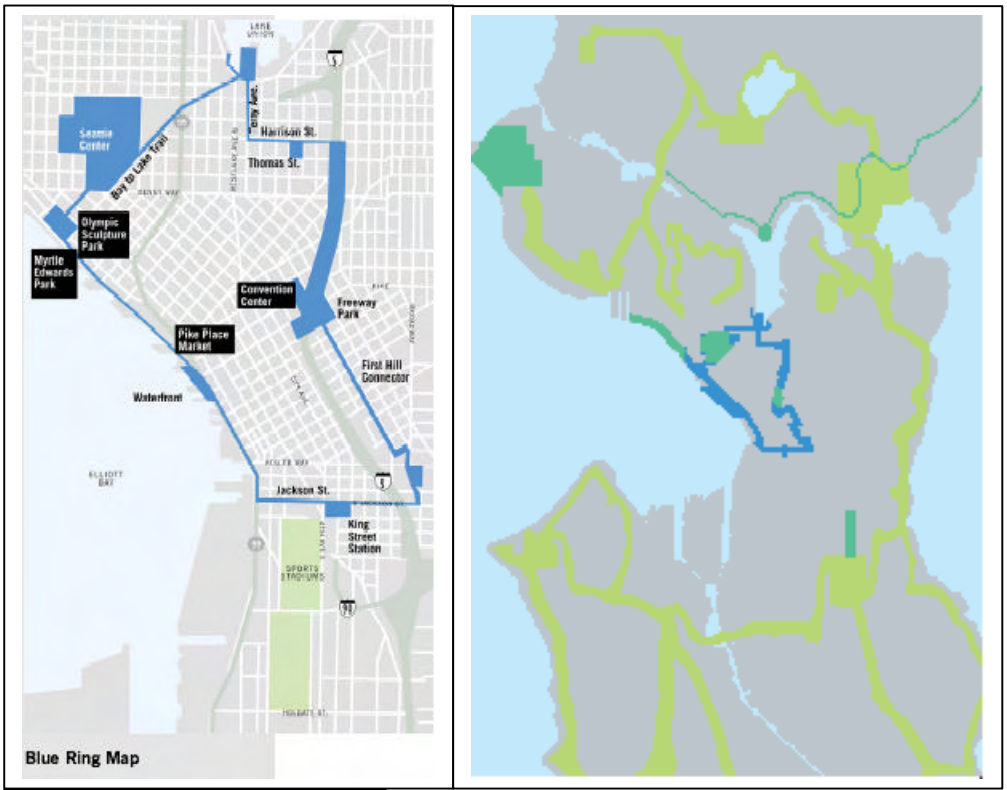
Just as roadways are classified as local, collector, arterial and highway, providing for different levels of connectivity, so too should non-motorized transportation be thought of with the same completeness. The creation and maintenance of a system of greenways would mean walking and biking are taken as seriously as modes of transportation. At the same time, an integrated greenways systems would make it easier for residents to walk and bike in their own neighborhood as a form of recreation. Greenways should be seen as multi-purpose paths, just as walking should be promoted as meeting multiple needs – transportation *and* recreation *and* health.

Linkages to Other Jurisdictions in Puget Sound

The Puget Sound Regional Council developed a *Regional Bicycle and Pedestrian Implementation Strategy for the Central Puget Sound Region* (PSRC 2002). The strategy is intended to serve as recommended blueprint that can be used to shape the work programs of all the agencies in the region; it is not a funding or enforcement program.

The City of Seattle has recently initiated a Central City Open Space Plan, sometimes known as the Blue Ring. The intention of the Blue Ring is similar to that of a greenway – to connect the vital public spaces within the central city through a loop of dedicated pedestrian routes. The route of the ring would be identified in part through public art and other public amenities. The 'blue ring' was intended as an urban version of the Seattle Olmstead Legacy of a 'Green Ring' of Parks, greenbelts and open spaces that can be found in many of the neighborhoods surrounding the central city.

While plans and implementation strategies have been made, political will is required to make the creation of a region-wide network of bicycle and pedestrian infrastructure a priority.



Source: *CityDesign, City of Seattle*

Greenways: the how

A number of infrastructure features distinguish a greenway street from other streets:

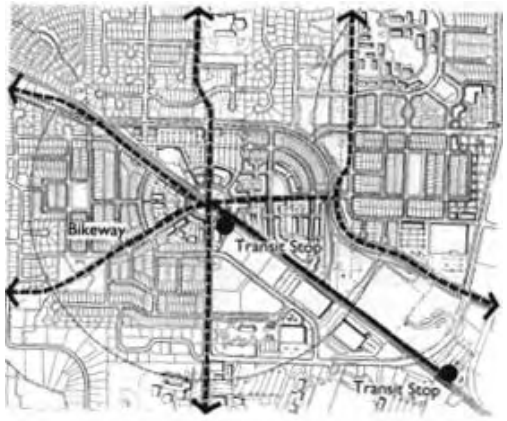
- Bicycle lane markings
- Pedestrian and bicycle controlled signals at crossings of major arterials
- Public art and signage at major intersections and landmarks
- Signage for motorists on shared greenway streets
- Acquisition of Additional public right of way sometimes
- Public art
- Public amenities such as drinking fountains, washrooms, parks, tot lots, benches, seating, information boards, public telephones

Greenways fall into two classes:

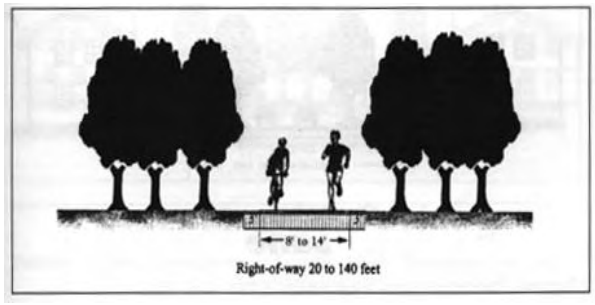
- Off-road/non-shared pathways or trails
- Shared road greenways (shared with cars)

Funding and Implementation

Retrofitting greenways into existing suburban neighborhoods is not an easy task. King County has already encountered resistance by local homeowners in its attempt to construct the East Lake Sammamish Trail. While there are numerous non-profit groups, such as Rails to Trails and Safe Routes to Schools which could aid in the funding and moral support, the creation of a greenways/public ways system needs to be understood as a significant infrastructure project which deserves both a 20 year plan and 100 year implementation strategy. This is a grand vision which requires a serious funding and implementation strategy.



Source: Calthorpe, *Next American Metropolis*

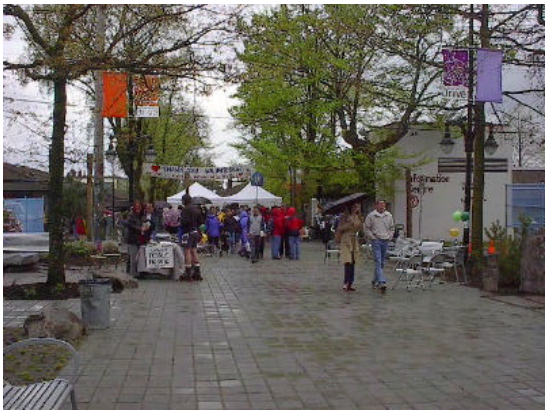


Source: *Healthy Streets,* Center for Livable Communities

Greenways - pedestrian amenities and features

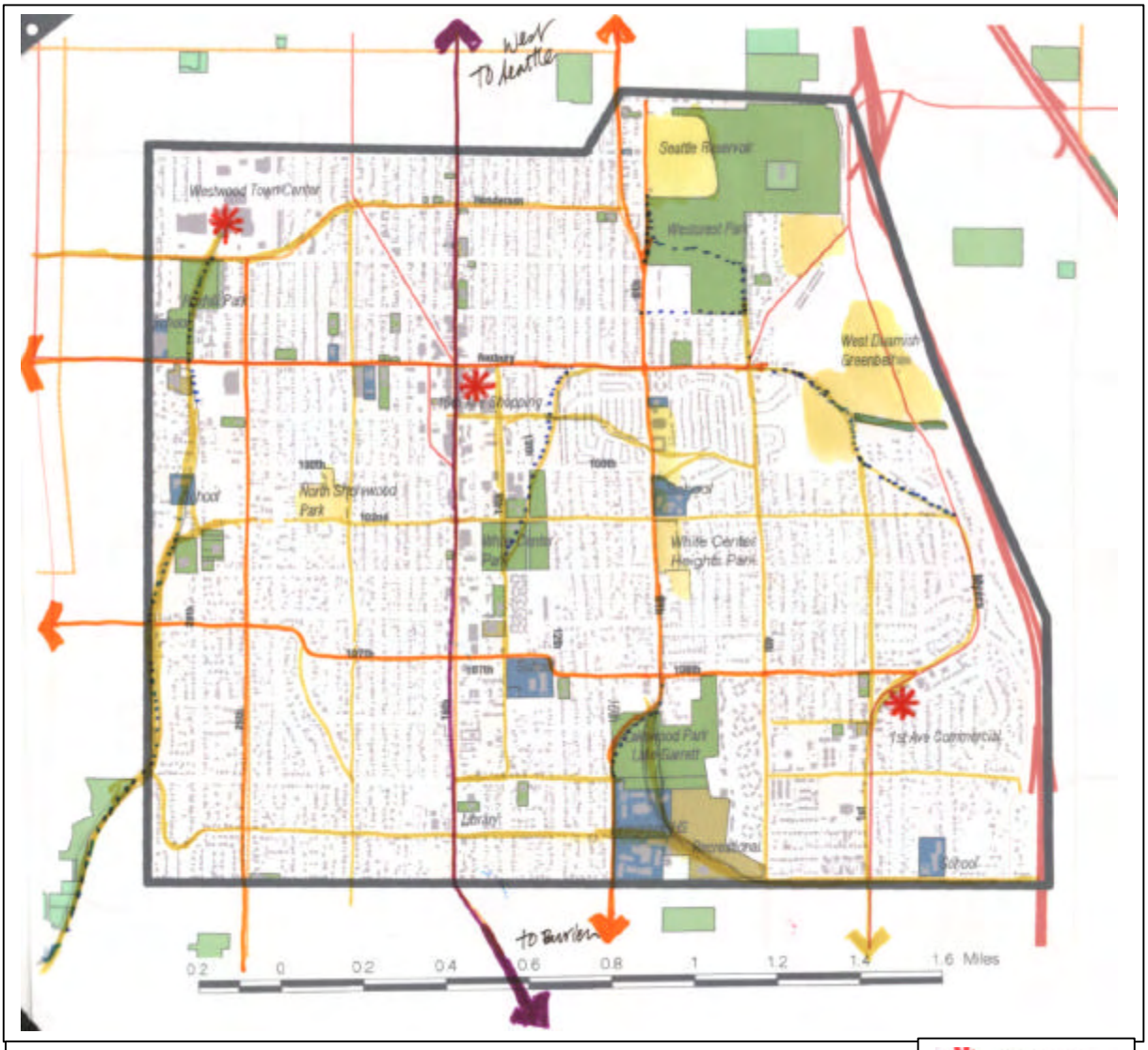
Ridgeway Greenway in Vancouver: Wayfinding signage

Ridgeway Greenway in Vancouver: pedestrian amenities, including: benches, drinking fountain, public telephone, pedestrian scale light, signange on roadway indicated to motorists that it is a shared street



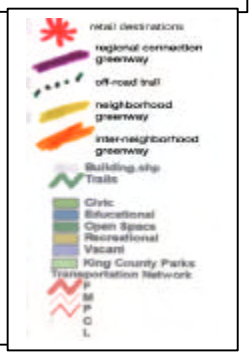
Commercial Drive, Vancouver. A neighborhood greenway on opening day. It leads from the community center to Commercial Drive.

Ridgeway Greenway in Vancouver: public art and pedestrian and bike controlled signals at crossings of major arterials



White Center Greenways Concept Plan:

White Center's greenways plan attempts to create a grid of local greenway streets that would connect the major public spaces and public institutions to each other. Importantly, the local greenways system would create a series of safe routes to schools and to public parks. The grid system of greenways would also provide recreational walking routes for local residents – a series of 'square routes', if you will. The system endeavors to create a couple of greenways that would utilize existing green belts and open space systems.



Kent East Hill Greenways Concept Plan:

Kent East Hill's lack of pedestrian connectivity could be dealt with in part by creating a network of greenways that help to both complete the fragmented public sidewalk system, and to create some new pedestrian and bicycle routes across the neighborhood where there are serious gaps. The system attempts to connect the major public and educational institutions to each other and to the commercial core. The greenways system could take advantage of Mill Creek Park, and a set of unimproved public rights of way to create a 'green ring' of recreational pedestrian and bicycle paths, giving Kent East Hill some much needed park space.

Legend:

Redmond Greenways Concept Plan:

Redmond's greenway system would complete the on-road bike lane system as well as completing and connecting two major regional trails –The Sammamish River Trail and the East Lake Sammamish Trail. A neighborhood greenway system would connect schools to park and trail spaces and also create some better connections and access from the single family area on Redmond Ridge down to the downtown and town center areas.

Street Design Improvements – Main Arterial and Commercial Streets

The third major urban design and transportation strategy that we are recommending for all three case study communities, and indeed for most suburban clusters within King County, involves street design improvements to the main commercial street(s). Each primary commercial street examined in the three case studies requires its own particular type of makeover, but the essential strategy is to make the main commercial street a multi-modal transportation conduit and also a coherent public space.

Streets are a significant municipal asset - they compose a significant percentage of land area in most communities and they are often the largest asset of a municipality. Streets function as important corridors for the transportation of goods and people, as well as for infrastructure networks – water sewer, drainage, cable, electricity, etc. But there is also a need to recognize that streets are also a place's primary public space, and a means of access to private property.

Urban design researchers and practitioners have been are paying new attention to street design and street typologies. Street width, lane configuration and design can greatly affect the quality of, and the very possibility for, pedestrian travel. We have come to realize many late 20th century suburban streets were designed and built exclusively for the automobile, often not even providing sidewalks (and we wonder why no one walks).

Street design standards are coming under scrutiny by urban designers and by transportation engineers, as they now realize that many streets are both over and under designed. Many suburban streets mandated by street design standards that are too wide and give cars lots of space while at the same time not providing sidewalks or planting strips. Wide lanes mean cars can, and do, travel faster. The kind of streets that one finds in older 'streetcar suburb' type neighborhoods would not be buildable under current engineering standards. Groups such as the Center for Livable Communities have developed *"Street Design Guidelines for Healthy Communities*". The Congress for New Urbanism is currently developing an street design manual that would provide appropriate street typologies for different urban densities and functions. Essentially what these various critics of standard engineering practice have realized is that there is need for clearer street design hierarchies, and a return to older street typologies that provided for multiple modes of transportation and not exclusively automobiles. These typologies range from back lanes to Grand Boulevards. They are understood as having not only a transportation function or capacity, but also an urban design or land use function, in helping to define a neighborhood, or slow traffic down through a neighborhood center.

In discussing street improvements, we include both street re-design or re-configuration as well as streetscape improvements. There is a need to reconfigure many streets to accommodate the functional transportation needs of pedestrian and bicyclists, and also a need for street designs that provide public amenities to the neighborhood in the form of

landscaping or street furniture, lighting, and other elements that can give a neighborhood a sense of place and identity.

Each of the case study communities has a set of major streets that define its central retail and commercial core. Generally, however, hese streets lack character and are dominated by the needs of the car. In addition, on many of these main arteries pedestrians have minimal facilities, and often bicyclists have none. Streetscape improvements to the primary commercial street help create a sense of identity and place. A well maintained main street is an indicator of community and economic vitality. A clear and connected network of pedestrian and bicycle facilities should be provided on these central arteries, especially within the central commercial district.

Essentially this strategy could be called *'Up the Hubness'*. This means creating a place where multiple modes of transportation all come together in the same place – as a place for transfer and connection between pedestrian, bicycle, bus, car, and commuter parking. Hubs are also usually good places to put lots of shopping and entertainment. The by-product of catering to all these needs is the creation of a public realm along the streetscape.

Design features that create a better pedestrian environment include:

- Planting strips, parking lanes, and street trees that provide a barrier between car travel lanes and pedestrian walkways
- Wider sidewalks
- Crosswalks with special paving
- Midblock crossings
- Landscaped medians
- Street trees and landscaping
- Pedestrian scale lighting
- Benches and street furniture (trash cans, drinking fountains, wayfinding signage)

Street Design: The How

Streetcape improvement can happen through both major public infrastructure projects and through incremental private development. In the best of situations, the public realm of the street is a public private partnership. Individual merchants, business associations, chambers of commerce, community development associations and municipal governments can work together on streetscaping projects, from hanging baskets to landscaping to the development of public infrastructure. Many street improvements, including sidewalks, are built by private developers as part of the total package of their new development. Street design master plans and street design guidelines can help make the incremental implementation of the public space of the street less haphazard, and more coherent and more functional.

Rest area, benches, hanging baskets

Mid-block crossings

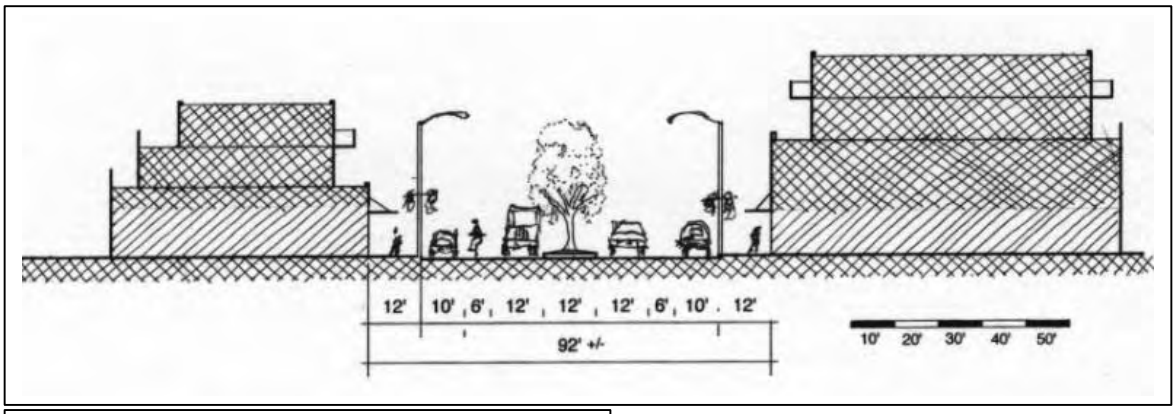
Landscaped medians

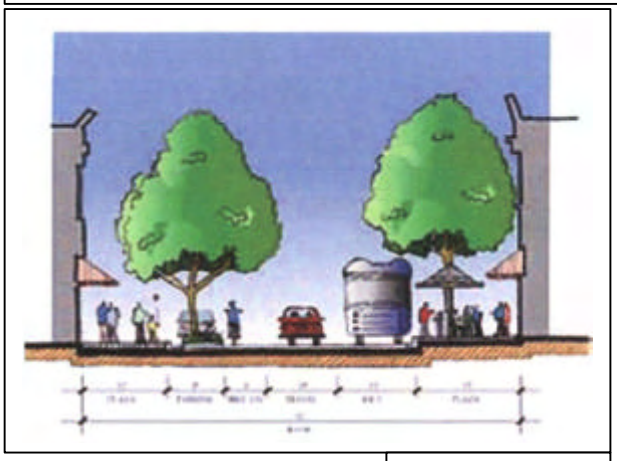
All photos – K. Kern

Wider crosswalks, hanging baskets

pedestrian scale street lights

crosswalks with special paving

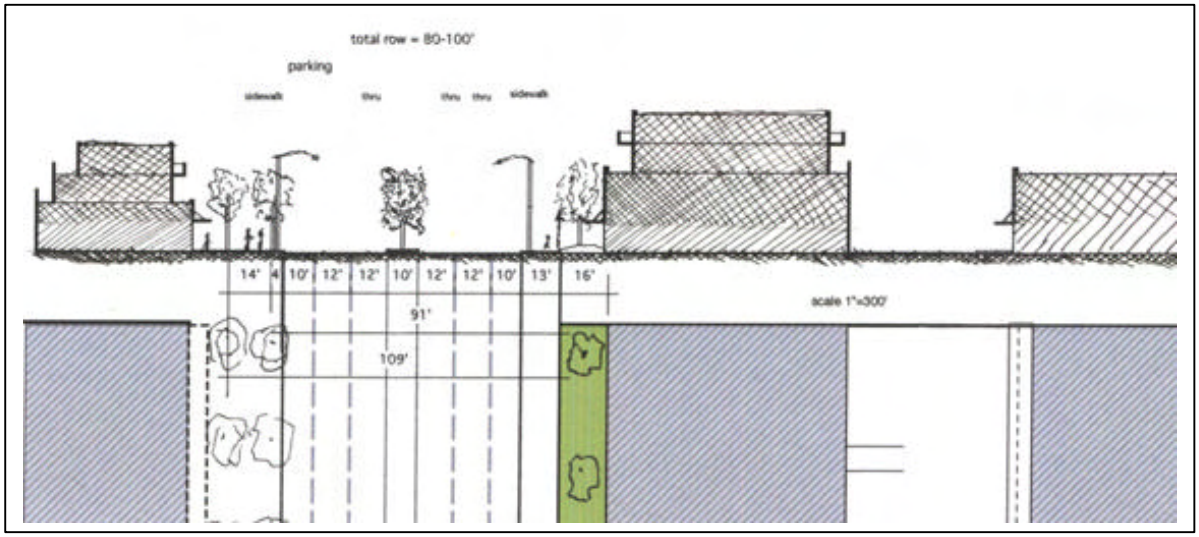




Source: Calthorpe

16th Ave SW) Streetscaping and Urban Design

While White Center has a distinctly urban commercial core with buildings that front the street rather than being surrounded by seas of parking lots, it lacks the amenities such as pedestrian scale street lights, street trees, wide sidewalks that would make it a highly pedestrian friendly environment. A well-designed streetscape could provide White Center with its own unique character, and 16th Avenue especially could benefit by reconfiguration and streetscape improvements. Importantly, a well maintained streetscape increases residents' perception of safety. Street lights scaled to both pedestrians and cars should be provided. Housing in the commercial core on commercial streets will provide much needed 'eyes on the street' – a key component of a safe urban environment.



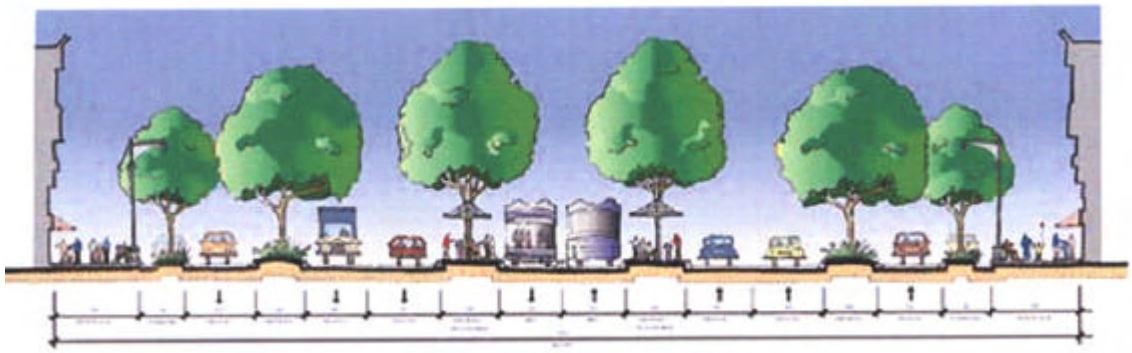


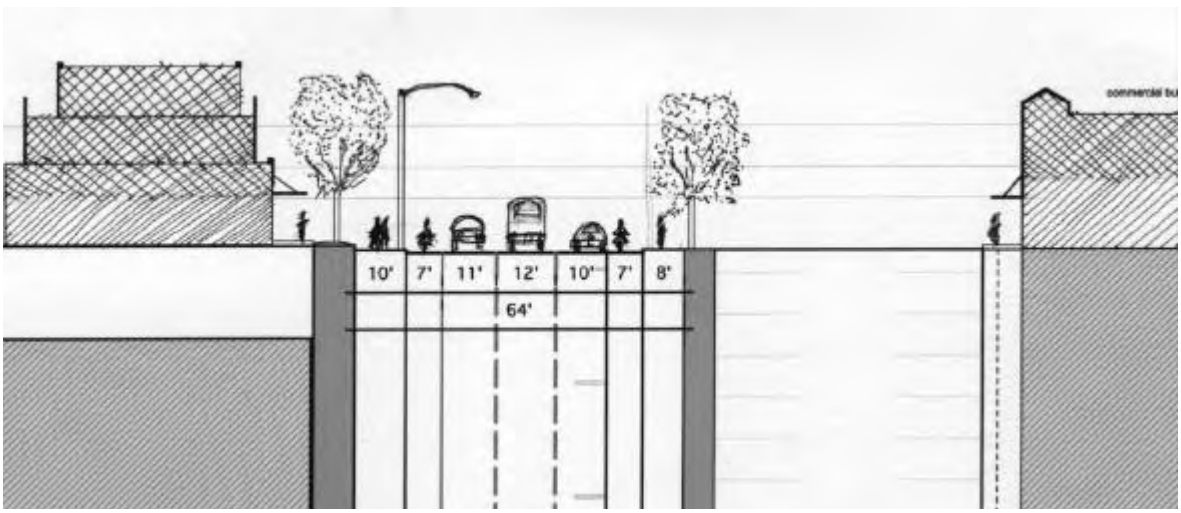
Illustration 3: Transit Boulevard

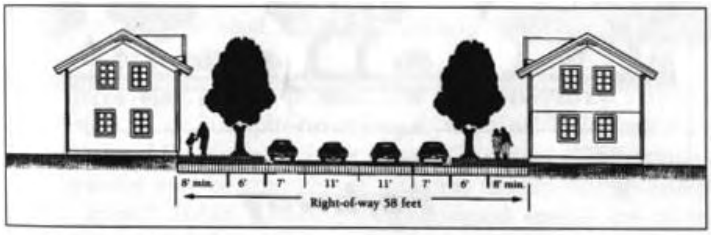
Source: Calthorpe

104th and 256th

Each of the main arterials in Kent East Hill needs to be rethought in terms of their main function, and what sort of street typology would be most appropriate. 104th could become more of a main street or grand boulevard which accommodates all modes of transportation (bike, ped, car, transit), and could also have some housing along it.

256th could become a rapid bus transit street, providing Kent East Hill a direct connection to downtown Kent and the commuter rail station.





Main Street without Median

Source: *Street Design Guidelines for Healthy Communities*, Dan Burden

Redmond Way

Redmond's one way couplet of Cleveland and Redmond Way should be returned to 2 way streets, as the city's Transportation Plan recommends. Design guidelines should encourage future private development to bring buildings closer to the property line, and to place parking on the side or at the back of the development. On street bike lanes should be provided as these are primary routes out and into downtown. Street trees and landscaped planting strips would also give some definition to the street.

STRATEGIES - White Center

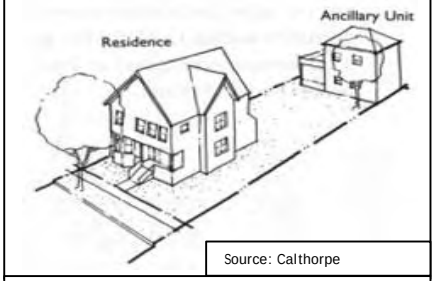
From the analysis of existing conditions, it is evident that White Center is a community that has a well-connected network of streets, but that lacks the required residential and commercial density that would promote walking. While there is a connected street network, when one takes a closer look the lack of connectivity for pedestrians and bicyclists is significant, as many of White Center's streets lack sidewalks. White Center has a good framework but it requires some attention to the details of urban design and needs a greater concentration of people living in and around the commercial core.

With a high density of intersections, White Center does not need to have additional street network connectivity. Instead it needs added pedestrian improvements and amenities such as sidewalks, buffers, street trees, crosswalks, pedestrian scaled street lights. In some locations, traffic calming may help make walking feel safer. White Center could also use some more retail and commercial destinations spread out throughout the neighborhood. Or, rather, there are areas of White Center that could use their own mini-node of retail, convenience, or restaurant as they are too far away from any of the existing hubs to comfortably walk.

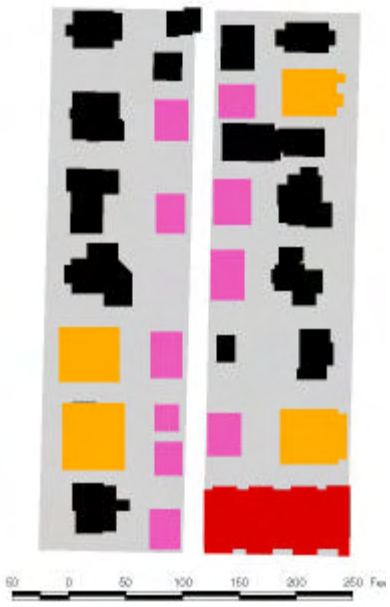
We are proposing four specific urban land use and transportation strategies for White Center, in addition to the measures recommended across King County.

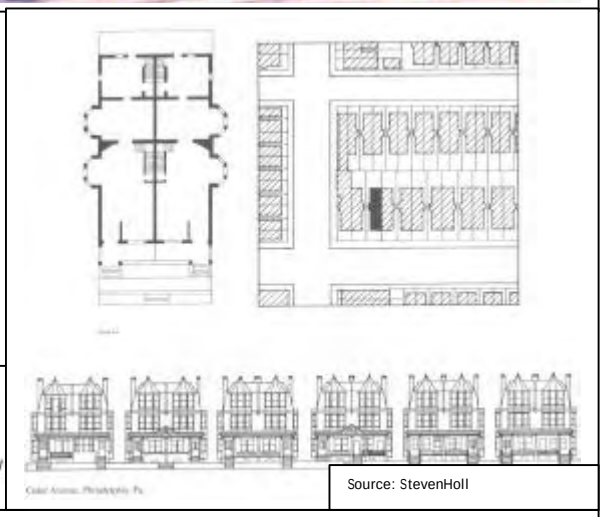
Specific Strategies for White Center:

i. Up-zone single family zones to duplex/triplex
ii. Develop alternative street design and natural drainage systems
iii. Develop an international marketplace/incubator building
iv. Provide affordable housing alternatives



Source: Calthorpe





Source: StevenHoll

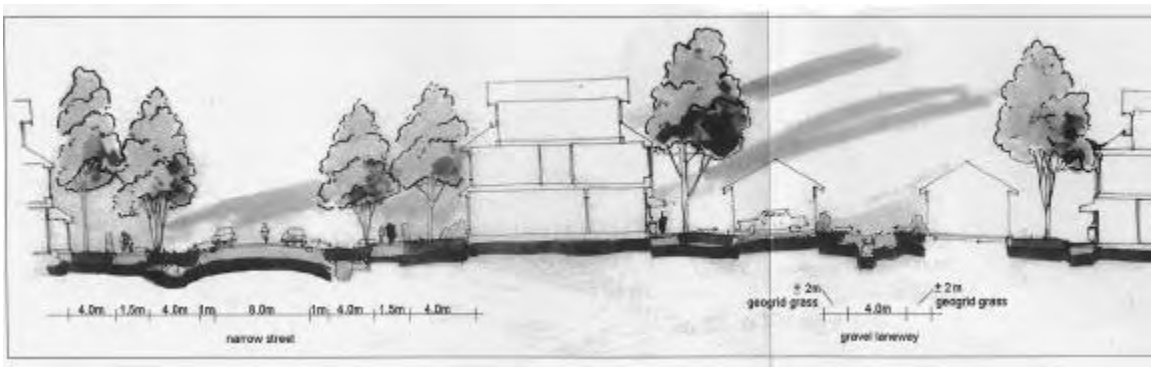
The single family areas of White Center could benefit by increased residential capacity. Many of the houses are very small and underutilize the full density potential of their lot. Some single-family areas within White Center could be rezoned or designated as low-rise multi-family, essentially for townhouse and duplext/triplex developments. Design guidelines for such infill housing should be developed so that appropriate development augments the existing character of these neighborhoods, and specific housing prototypes should be encouraged. Many of the blocks in White Center have back alleys which would permit the development of coach houses, granny flats and lane houses. The illustration provides an example of a typical single family block infilled with duplex and triplex developments. This type of development could be further encouraged by providing building plans and design assistance to small builders and developers; perhaps the White Center Community Development Association could act as a resource for small builders who may otherwise build ad hoc additions to single family houses. White Center has recently generated a lot of interest and attention from planners and researchers including from the College of Architecture and Urban Planning at the University of Washington, which includes programs in architecture, planning, landscape architecture, urban design and construction management. With assistance from the college, housing prototypes that are specifically appropriate for White Center could be developed and provided to the White Center Community Development Asociation for distribution to local builders.

White Center – Alternative Residential Street Design

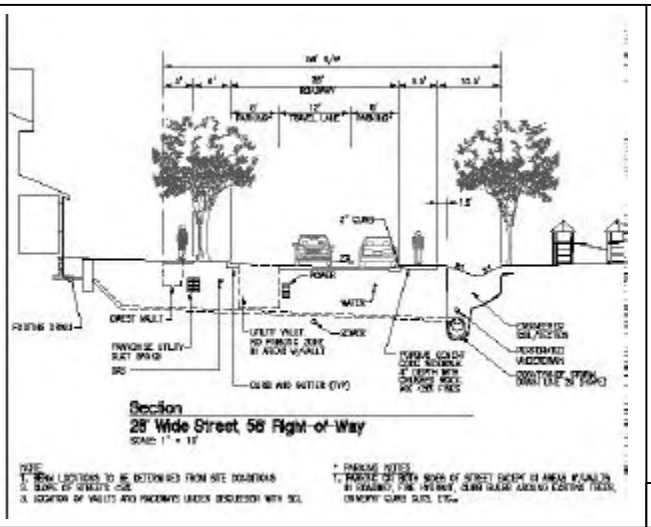
One of the primary reasons that many streets in White Center lack sidewalks is that they also lack a formal stormwater drainage system. It is now being recognized that extensive formal drainage systems are expensive and often unsustainable, and that the retention of natural systems may be both more environmentally friendly and less expensive to maintain. Seattle Public Utilities has developed a pilot project known as Sea-Street or Street Edge Alternative, which is designed to provide drainage that more closely mimics the natural landscape prior to development, while providing designated walkways for pedestrians. Complete information about Sea-Streets can be found on Seattle Public Utilities web site: http://www.cityofseattle.net/util/SEAStreets/default.htm

While the Sea-Street pilot project was a capital project incurred by SPU, many street improvements are in fact completed incrementally by private development. Some street improvements can also be done by a Local Improvement District system. Local Improvement Districts are a means by which local property owners essentially pay for local improvements such as sidewalks or street improvements through additional tax assessments that are amortized over time and coordinated by the municipal authority. The City of Seattle has recently revived its LID system after years of being essentially dormant. More information can be found on the SDOT's website: http://www.ci.seattle.wa.us/transportation/lidhome.htm

Seattle Public Utilities is developing more examples of Natural Systems drainage in the renovation of the High Point housing project north of the White Center study area. The city and the county could develop models and design guidelines for alternative and inexpensive street improvements which would both retain natural systems drainage and provide designated pathways for pedestrians that could be incrementally constructed by private development or by Local Improvement Districts. Examples of such an alternative street design are shown in the illustrations.



Source: P. Condon



Source: SPU

Photos by K, kern

White Center – Marketplace 'incubator building'

White Center needs a greater concentration of people living within and proximate to the commercial core(s). While there is good connectivity within the street network, the low overall residential density means that there is inadequate demand for commercial and transportation services. The presence of residential uses within the commercial core of 16th Avenue would provide 'eyes on the street' that would help to make the area safer. Mixed use projects with commercial on the ground floor and residential above should be encouraged. Design guidelines for such developments should be articulated so that the urban character of White Center's commercial core is augmented and pedestrian friendly streets are created.

The following project is presented as a mixed use type appropriate to the infill development in White Center's commercial core. It is a mixed use project prototype containing affordable housing with community development facilites, and could reflect White Center's ethnic diversity and support the immigrant population.

An 'Incubator' building in the core of White Center could provide a marketplace or market hall for small businesses to rent small spaces and build their business. Such an 'incubator' building could also house other social services as well as have affordable housing on the upper levels. The renovation of Swan's Marketplace in Oakland by Pyatok Architects present a precedent for such a project in both its architectural form and in its social program.

Ground Floor

Second Floor

Swan's s Marketplace

Oakland, California

The renovation of this historic downtown Market Hall by the non-profit East Bay Asian Local Development Corporation includes a new fresh food market hall, restaurants, street oriented retail, 20 Co-housing condominium units and common house, 18 affordable rental units, live/work space, commercial office space and on-site parking. The Museum of Children's Art occupies a second floor space over looking Swans Court and will sponsor indoor and outdoor children's projects on site. Swan's Market was a major shopping destination for all of the East Bay for over 60 years and remains an important downtown landmark. The existing structure, built in several stages from 1917 - 1940, encompasses an entire city block in the Old Oakland Neighborhood. The facade is a unique example of glazed brick and terra cotta commercial architecture. The open interiors are lit by 200' long north facing clerestories supported by long span steel trusses.

Source: Pyatok Architects

White center – alternative and affordable housing prototypes

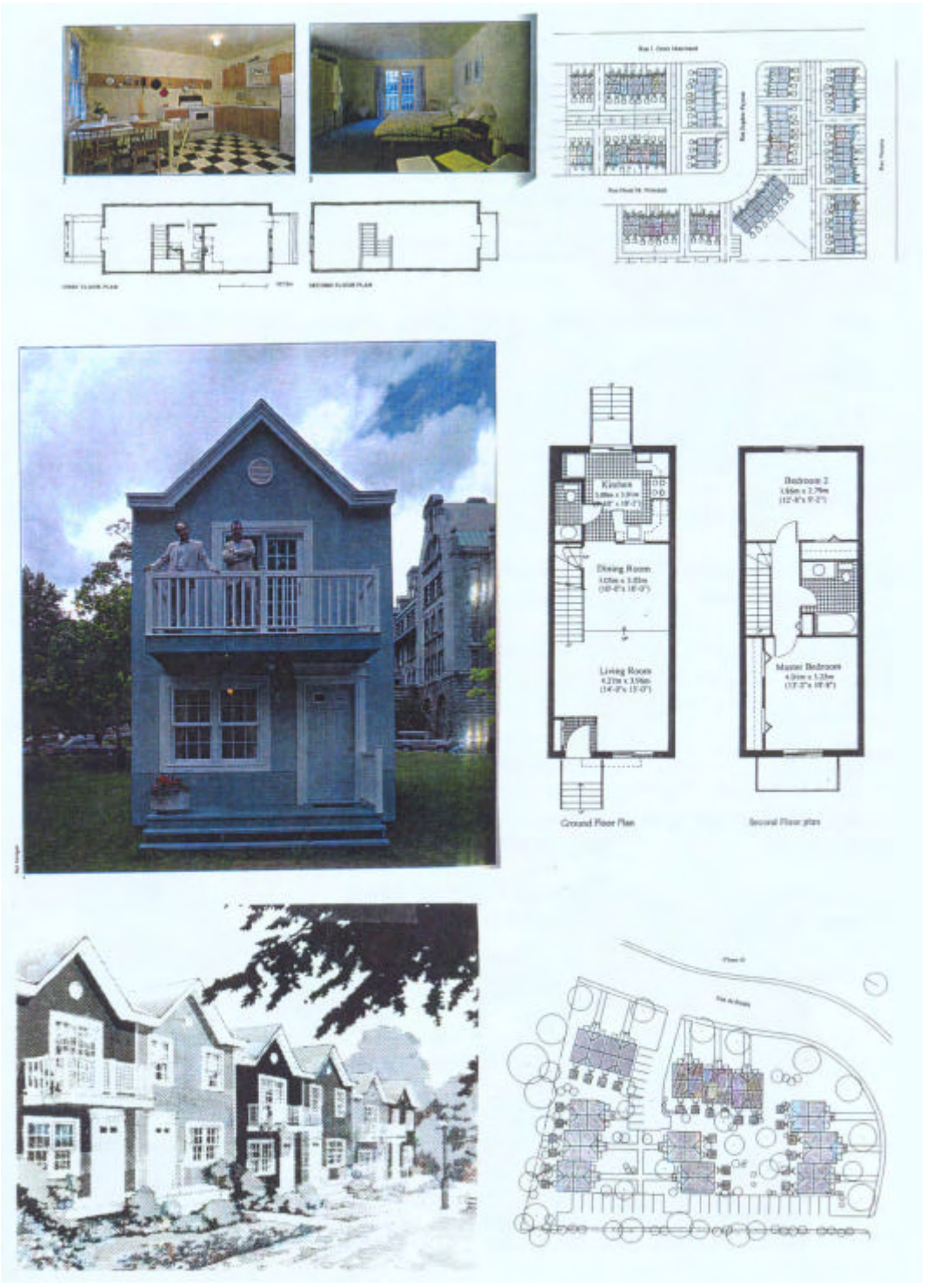
A variety of medium densities and housing types should be encouraged. Ground oriented housing preferable to apartments with no access to outside.

Grow house is a model starter house project developed by the Affordable Homes program of McGil University's School of Architecture. The design is for a 2 bedroom row house of about 1000 square feet that can be built on lots as small as 14' wide. Built as row houses, they can reach densities of 20 units per acre.

Sprout House was developed through research for Canada Mortgage and Housing Corporation. The Sprout house attempts to combine the principles of flexibility, incrementalism, and participation. The Sprout House is designed to grow over time, by adding extra bedrooms and living space, an office or an accessory dwelling both in the basement, up in the attic, and out the back. It can start off as a 990 sq. ft single row house, and over time can become a 2000 sq. ft house with a 800 sq. ft accessory apartment. It requires a minimum 20' frontage and 60' depth. The intention is to provide first time buyers with an affordable option that meets their immediate space needs while providing opportunity for future expansion.

Hawks Ave Row House – A rehabilitation of early 20th century structures : 7 small rowhouses fit on one 50' x 100' lot.

Live work – In townhouses such as these, work space on ground level – could be 'dirty' (i.e. art studio , mechanical work) or 'clean' work (office, writing, music). Living spaces are found on the upper floors. There are many home-based businesses in White Center as White Center has become a 'gateway' neighborhood for new immigrants. Housing prototypes and guidelines for both multifamily and single family developments should be encouraged to integrate small work spaces into residences to create live-work housing. Zoning and business licensing changes might also be required.



White Center – Alternative Housing Prototypes

White Center – Alternative Housing Prototypes

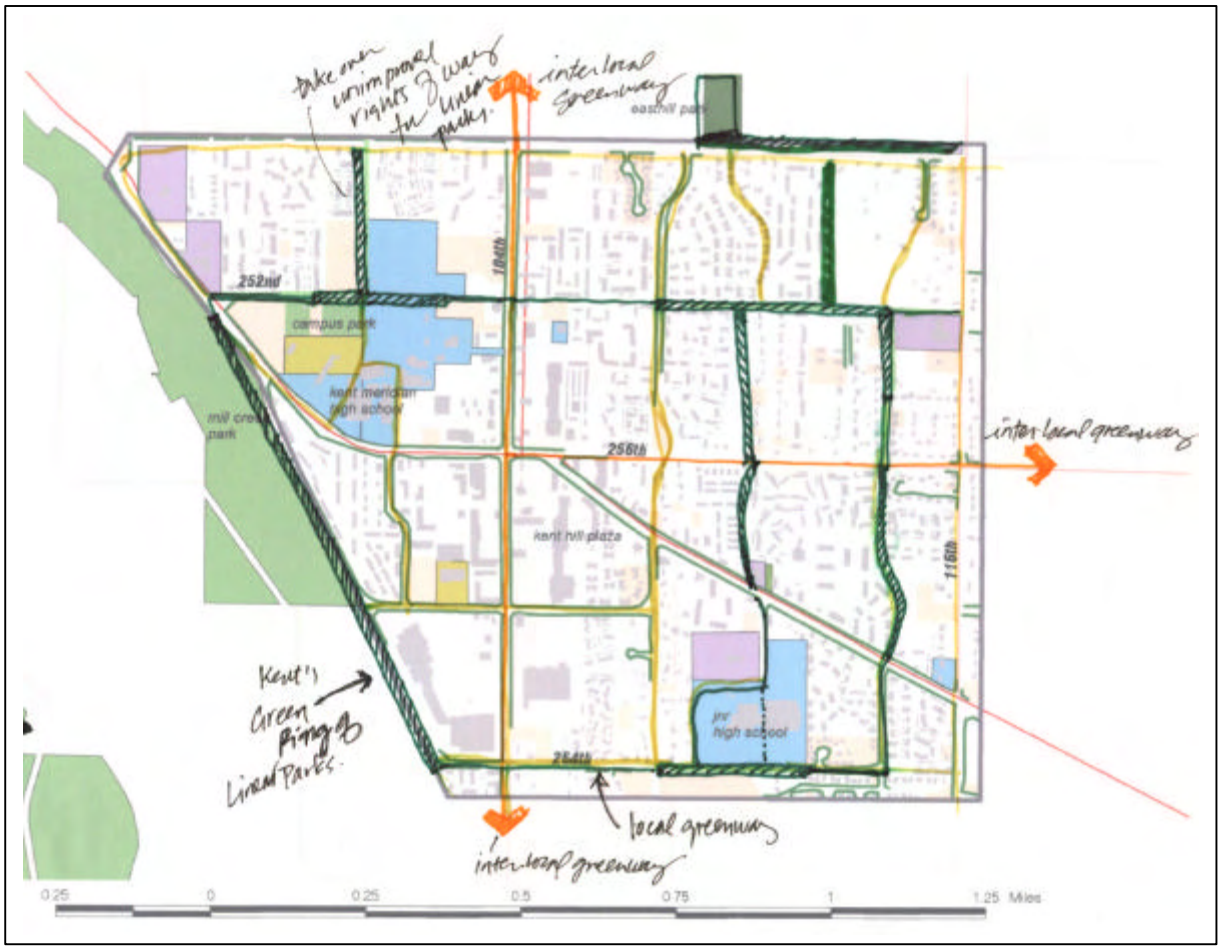
STRATEGIES - Kent East Hill

Kent East Hill is a prototypical suburban cluster with a large concentration of strip mall and big box retail at its core, surrounded by high density multifamily housing projects. While it has a good mix of land uses, it especially lacks pedestrian connectivity. It was designed as auto-oriented environment, and so it make take next 20-100 years to slowly undo and re-frame its basic infrastructure and turn it into a pedestrian and transit friendly place.

In addition to creating a system of greenways/public ways, and increasing or allowing for residential density in its commercial core, the specific strategies for Kent East Hill that we are recommending include:

- Make Kent East Hill a transit hub, with a stop for bus rapid transit directly into Kent Station and park and ride parking at the intersection of 104th and 256th, in a structured lot. 256th should accommodate rapid bus transit and the connection to all other modes – bike, ped, regular bus, commuter parking, and the car.
- Create a system of linear public open spaces along unimproved rights of way that would create a 'green ring' of public open space for Kent East Hill, which is lacking in park space within its boundaries.
- Encourage the eventual redevelopment of giant shopping malls and big box retail to mixed use. Discourage surface parking through design guidelines, encourage housing above retail, and require the addition of public or village green space. A project by Peter Calthorpe is shown to illustrate this form of redevelopment.
- Create urban design and private development guidelines that would encourage appropriate development.

Kent - Increase Greenspace - linear Parks/greenway paths on umimproved ROW



Kent East Hill's Green Ring is intended as a set of linear parks which together would help form a natural greenway trail for the neighborhood that could be used for recreational purposes. Kent East Hill lacks green/park space, and this is a relatively inexpensive way to expand it, as many of the routes chosen are along existing but unimproved rights of way. Provide some mini-rest stops with public amenities along the way: like drinking water fountains, public toilets, benches, view points, a tot lot even. Promote walking – as a way to get to know the neighborhood, as recreation, as transportation, as a safe way to get to school, or to get to the store, marketplace or gym.

BRT Vehicle Taking on Passengers

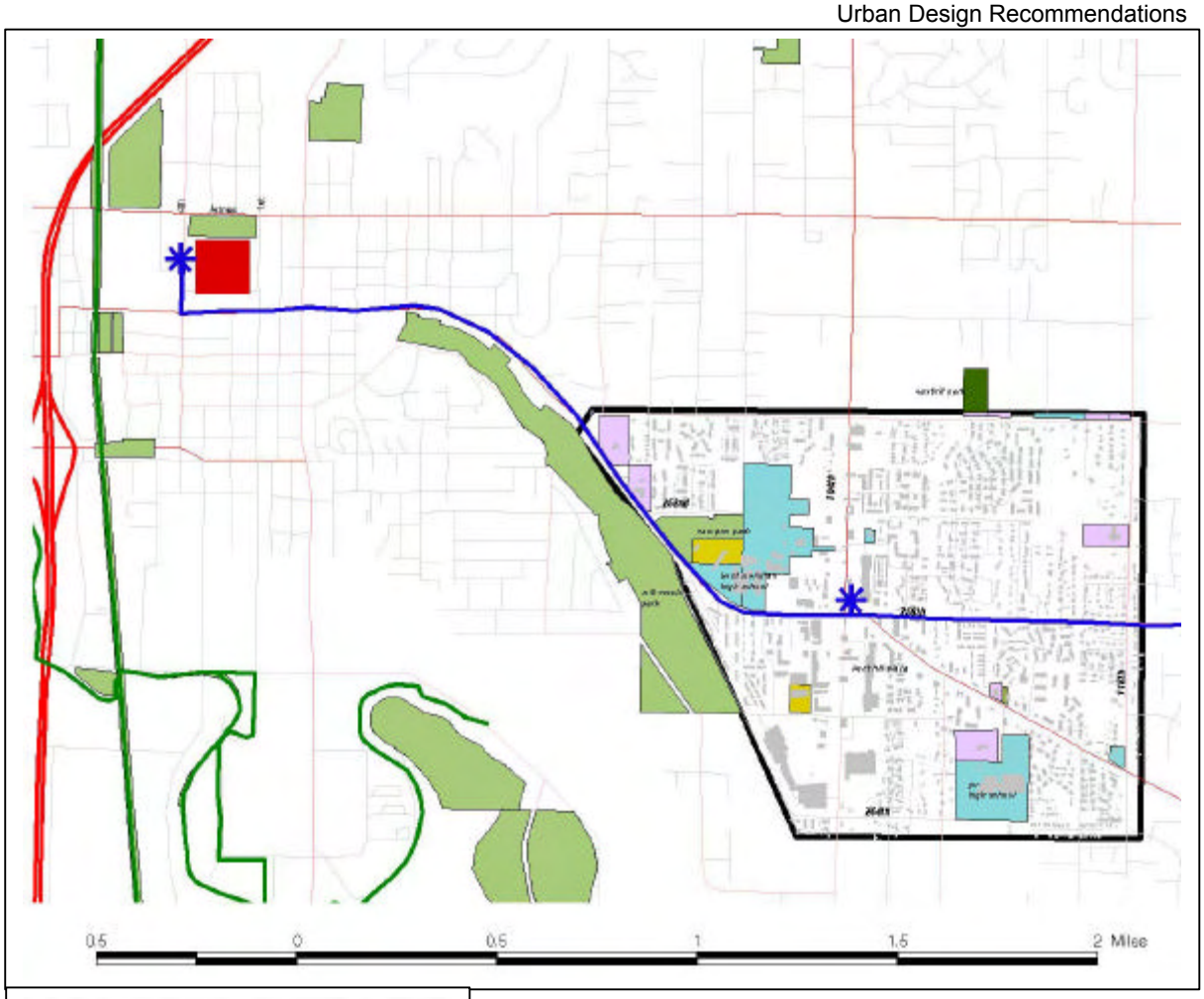
BRT adds value and character to a community

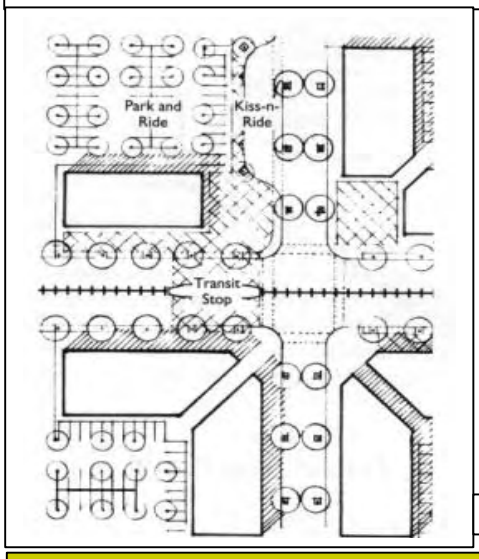
Proposed BRT Concept in Oregon

Simple design provides shelter and a raised platform on a limited budget -- Curitiba

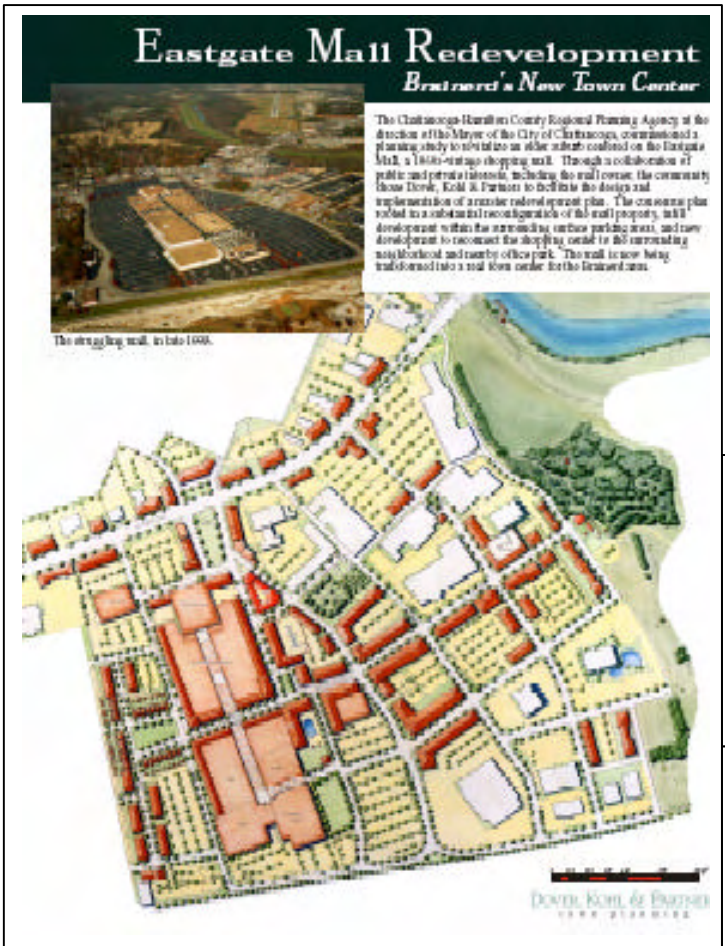
Source: www.gobrt.org

Bus Rapid Transit is a roadway-based rapid transit system that looks and operates much like a subway, except instead of a train the system utilizes on-road buses. In order to function more efficiently, bus stops can be found on raised platforms to alleviate the need for passengers to climb stairs as with most city buses. It offers high capacity rapid transit service on dedicated lanes. By using roads BRT does not require expensive new infrastructure. 256th could become a bus rapid transit street that would take riders directly to the commuter rail station in downtown Kent. A park and ride should be provided at 104th and the Intersection of 104 and 256 would have to be improved for pedestrians. If there are a lot of transit riders, then more people will have to cross the street.

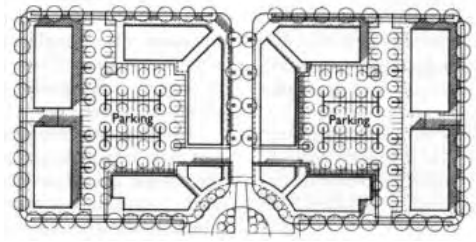


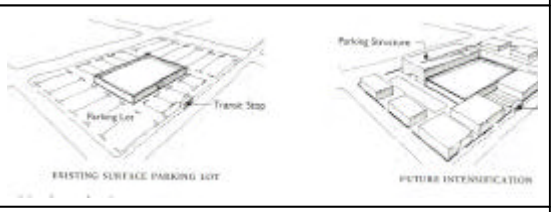


Source: Calthorpe, *Next American Metropolis*



Source: www.doverkohl.com





Source: Calthorpe, *Next American Metropois*

The typology of single use retail mall dominates Kent's commercial area. In this auto-dominant form, there are few sidewalks for pedestrians, who have to navigate seas of asphalt parking lots to get to the front door of the store. Single use function means these places are dead at night. Kent and other suburban cities should create design guidelines that would encourage mixed use development in these suburban areas, and that would provide site planning guidance so parking is designed to be less ominous and sea-like. Future parking should be encouraged in structures rather than at grade. We are showing a Calthorpe proposal to redevelop a mall in Boulder - it represents an interesting precedent for Kent East Hill and other similar suburban clusters. As does the project by Dover, Kohl & Partner is another good precedent.

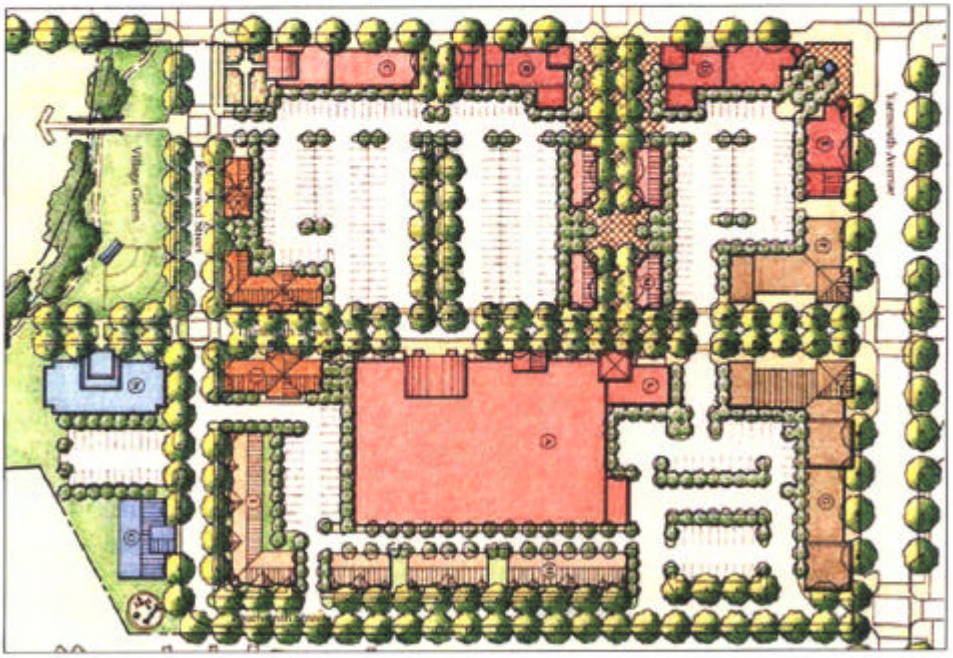
North Boulder Safeway & Village Center

Boulder, Colorado

The North Boulder Safeway project pioneers a way in which "big box" retail can also help create a "main street" environment. While the grocery store's entrance faces parking (a contemporary requirement), the associated small shops have their entrances and display windows facing the surrounding streets. Many of these small shops have office space or apartments above to create a more active, round-the-clock setting. Building variety is stressed and sets a more human-scaled rhythm along the street.

Plazas at the street not only accommodate cafes and transit amenities, but also establish views of the Safeway and parking lot at critical locations. Other civic features include a village green (that "daylights" a creek) and a new public library. Townhouses face the village green and local streets, making this a truly mixed-use project.

The Village Center will provide a complementary, pedestrian-oriented mix of commercial, residential, and civic uses that meets the needs of the local residents and workers.

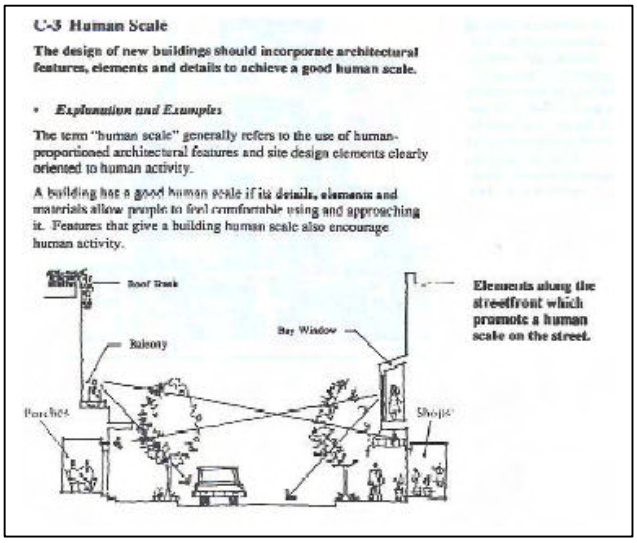


Client:	Safeway
Type:	Revitalization
Scope:	Mixed Use Master Plan
Scale:	60,000 sf of retail, residential units
Date:	1997

CALTHORPE ASSOCIATES

Source: Calthorpe, Associates

Kent-Urban Design Guidelines



C-3 Human Scale

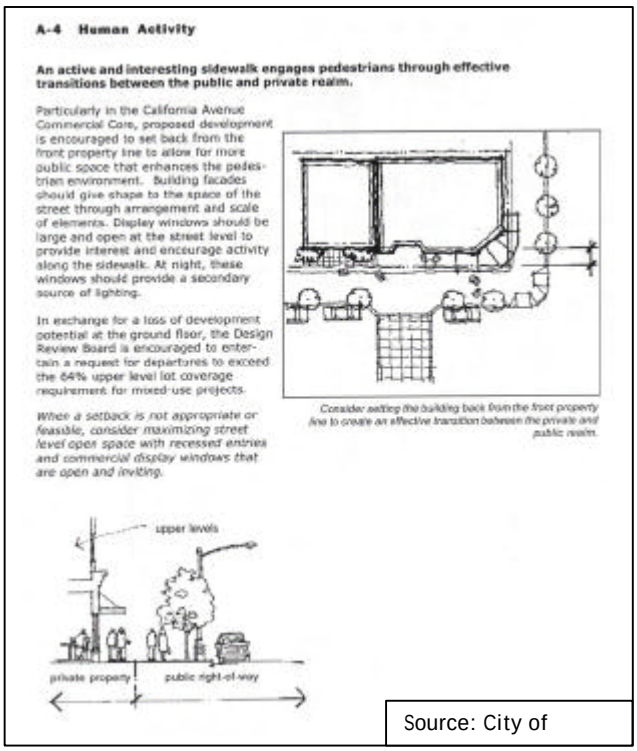
The design of new buildings should incorporate architectural features, elements and details to achieve a good human scale.

- ***Explanation and Examples***

The term "human scale" generally refers to the use of human-proportioned architectural features and site design elements clearly oriented to human activity.

A building has a good human scale if its details, elements and materials allow people to feel comfortable using and approaching it. Features that give a building human scale also encourage human activity.

Elements along the streetfront which promote a human scale on the street.



A-4 Human Activity

An active and interesting sidewalk engages pedestrians through effective transitions between the public and private realm.

Particularly in the California Avenue Commercial Core, proposed development is encouraged to set back from the front property line to allow for more public space that enhances the pedestrian environment. Building facades should give shape to the space of the street through arrangement and scale of elements. Display windows should be large and open at the street level to provide interest and encourage activity along the sidewalk. At night, these windows should provide a secondary source of lighting.

In exchange for a loss of development potential at the ground floor, the Design Review Board is encouraged to entertain a request for departures to exceed the 64% upper level lot coverage requirement for mixed-use projects.

Where a setback is not appropriate or feasible, consider maximizing street level open space with recessed entries and commercial display windows that are open and inviting.

Consider setting the building back from the front property line to create an effective transition between the private and public realm.

Source: City of

Kent East Hill and other suburban clusters that would like to evolve and mature into transit oriented development will need urban design guidelines developed specifically to deal with the site design issues inherent in suburban retrofit.

Most suburban developments are turned inward.

Such guidelines will have to deal with many of same design issues, certainly, as with urban design guidelines, but will have to deal with difficulty of getting more right of ways, more pedestrian connectivity and access into all parts of the neighborhood. Site design for multi-family development should also be developed and put into place. Most such developments do not provide any sidewalks or pedestrian facilities for their residents within their large sites, and they fence them selves off from any intruders.

Site planning standards for retail developments should ensure that there are pedestrian connections from new retail development (shopping malls) to public sidewalks.

Planners need to ensure that future developments will create linkages and pedestrian connections and will not become isolated parcels by mandating that each development create linkages and connections to other streets.

Redmond - Urban Design Strategies

Redmond is a thriving community that has a lot of potential to become a vibrant and diverse city with a wealth of public amenities and recreational resources. It has an interesting urban with a number of different urban fabrics that are patched together. Redmond's primary deficiency is its lack of residential density in the commercial core. This is beginning to be addressed, and a number of developments have been constructed in the past few years which are creating high density urban housing in the commercial core. Some of the projects that have been built have taken care to use 'New Urbanist' design principles – Lion's Gate Housing is such an example.

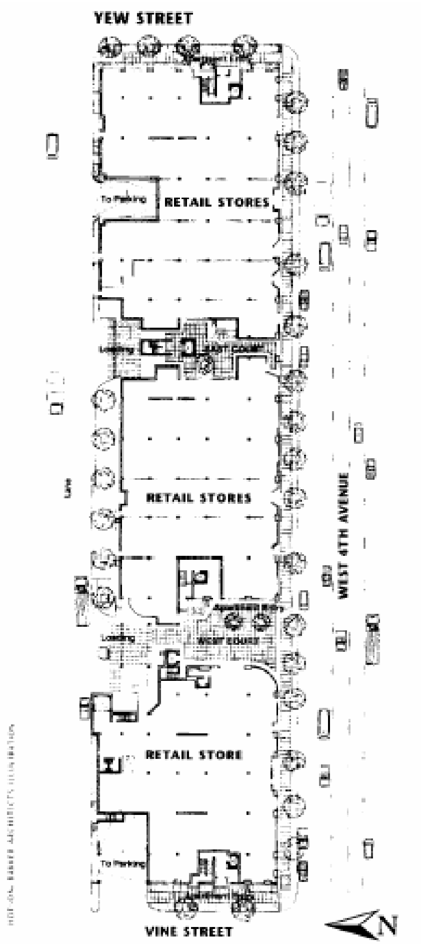
In recognition that it is undergoing tremendous growth, Redmond has already developed a Transportation Plan for the downtown area in consultation with Parsons Brinkerhoff Quade & Douglas. The recommended action agenda for implementation includes:

- Completing the downtown street grid throughout downtown
- Create gateways and pedestrian/bike connections
- Improve the pedestrian environment
- Convert Redmond/Cleveland to 2way circulation after the completion of Bear Creek Parkway
- Re-use the Burlington Northern Santa Fe Railroad Right of Way for transit, trail and open space use, and make connections between downtown and the new Redmond Town Center.

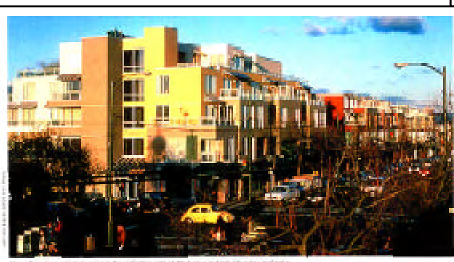
In addition, the City of Redmond is also working on a Downtown Element to its Comprehensive Plan Amendment. It includes updates to policies that emphasize the goal of retaining Redmond's distinctive character through urban design, street design and open space guidelines and regulations and it tries to reduce some of the regulatory barriers to innovative housing, such as cottage homes and duplexes. The plan's vision for downtown Redmond has been based on many years of workshops with people who live and work in Redmond. Amongst other ideals, it seeks to create a city which 'is oriented to pedestrians and bicycles, with attractive 'local' streets appropriate for a destination environment' and which provides attractive and safe places to live close to amenities and meets community needs for employment, shopping, recreation, civic activities, cultural and night-life in an 18-hour downtown (*Redmond Comprehensive Plan Amendment, February 2004*).

Redmond already is taking on many of the strategies that would help create a more walkable and livable environment. Neverthless, in addition to its existing policies, we also offer the following suggestions:

- Develop appropriate typologies for high density urban housing
- Permit non-traditional housing such as live-work housing
- Complete the bike path network inter-Redmond and use this to re-develop an appropriate street hierarchy, making some streets 'more local'



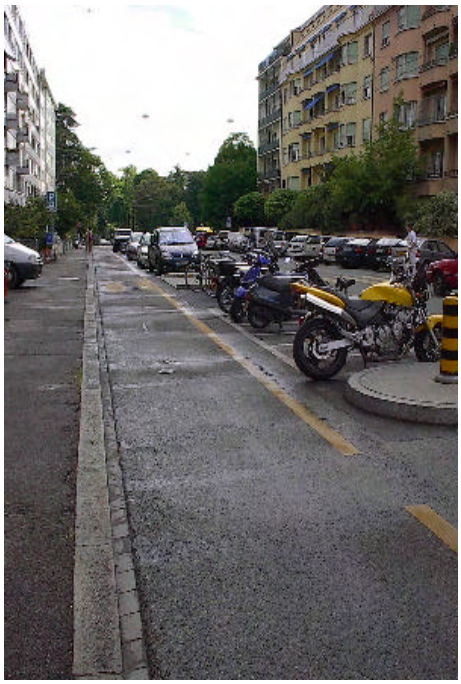
West courtyard open space



Developer/Owner:	[illegible]	**PROJECT DATA**	
Architect:	[illegible]	Zoning:	[illegible]
Landscape Architect:	[illegible]	Site area:	[illegible]
City Staff:	[illegible]	FSR:	[illegible]
Year of completion:	[illegible]	Use:	[illegible]
		Floor area:	[illegible]
		Height:	[illegible]

Source: City of Vancouver, ***Vancouver's Urban Design: A Decade of Achievements*** **(December, 1999)**

This project provides some lessons on good urban design for urban intensification: the building maintains a street wall in continuity with the surrounding neighborhood. The mass of the building is broken up by small courtyards which provide space for café seating as well as entry to the second level offices and to residential units on upper floors. The courtyards also provide pedestrian access to the back lane, creating a finer grained pedestrian network. The residential units are given a different architectural expression and are stepped back, allowing for more light and large balconies.



Geneva –photo K.Kern

Source: www. *www.pedbikeimages.org / king/burden*

Source: www. *www.pedbikeimages.org / burden*

Source: www. *www.pedbikeimages.org /*

Redmond is known as the 'Bicycle Capital of the Northwest'. It already has more designated and demarcated bike lanes than most other communities, but it would do well to complete the on street bike path system, and create seamless connections between local streets, greenways and regional trails. The city could consider alternative bike lane design, such as the examples above from European cities. The addition of bike lanes on some streets could go hand in hand with the desire to create a better street hierarchy; some of the new residential streets in the Northwest quadrant (aka Sammamish Trail, Town Square, River View and Valley View neighborhhods) are too wide and seem like arterials. The addition of generous bike lanes, as well as reconfigured street parking, landscaped medians, or boulevards could help create calmer, more residential-like streets.






Photos by k. kern

Redmond is expecting to increase its population by about 16,000, add an additional 8,000 dwelling units and quite possibly an additional 44,000 jobs by 2022 (City of Redmond, 2022 Draft Growth Alternatives). The city of Redmond should consider allowing non-traditional forms of housing such as (artist) live-work housing, and loft style condos which are popular with young, hip, educated urban homebuyers. The above examples are all artist live-work buildings in the Brewery Creek neighborhood in Vancouver, where the City allowed live-work buildings to be built to a higher density than elsewhere. Some building codes were relaxed to permit this new housing typology – such as lower on-site parking requirements, and the ability to borrow light for loft bedrooms.

Redmond – Live/Work Housing Prototypes

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